

Natura Impact Statement

Burkeway Bearna Strategic
Housing Development



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1. INTRODUCTION

1.1 Background

McCarthy Keville O’Sullivan Ltd. (MKO) has been appointed to prepare a Natura Impact Statement [NIS], so as to enable the competent authority to conduct a Stage Two Appropriate Assessment of a proposed strategic housing development (SHD) consisting of 121 no. dwelling houses together with a crèche facility, associated outdoor play areas and car parking; a footpath connectivity link along the L-1321; shared communal and private open space; car and bicycle parking; site landscaping and public lighting; decommissioning of the existing wastewater treatment plant and provision of all services; access from the L-1321 via the Cnoc Fraoigh development and all associated site development works; and a public linear park along the Trusky Stream. The proposed development is located in the townlands of Trusky East, Trusky West, Freeport and Ahaglugger, Bearna, Co. Galway.

An Appropriate Assessment Screening Report has also been prepared and submitted with the planning application and should be read in conjunction with this NIS. The Appropriate Assessment Screening Report has identified 2 no. European Sites upon which the proposed development has the potential to result in significant effects and the pathways by which those potential effects may occur. It has also identified those qualifying interests/special conservation interests that have the potential to be affected by the proposed development.

Accordingly, this Natura Impact Statement is submitted pursuant to subsection 8(2) of the Planning and Development (Housing) and Residential Tenancies Act 2016, to enable the Board to conduct an Appropriate Assessment in accordance with the provisions of Article 6(3) of the Habitats Directive and section 177V of the Planning and Development Act 2000.

Article 6(3) of the Habitats Directive provide as follows:

Article 6(3): Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and if appropriate, after having obtained the opinion of the general public.

This Natura Impact Statement has been prepared in accordance with Section 177T of the Planning and Development Act 2000 and in accordance with the European Commission’s Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001), European Communities (2018) Managing Natura 2000 Sites: the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC (EC, 2018) and the Department of the Environment’s Appropriate Assessment of Plans and Projects in Ireland (- Guidance for Planning Authorities (DoEHLG, 2010)..

In addition to the documents referenced above, the following relevant documents were also considered in the preparation of this report:

1. Council of the European Commission (1992) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal of the European Communities. Series L 20, pp. 7-49.
2. EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.

Statement of Authority

A baseline ecological survey was undertaken on the 31st May 2018, the 30th August 2019 and 19th September 2019 by Pat Roberts (BSc, MCIEEM) of MKO. An additional site visit was conducted on the 29th of November 2019 by Pat Roberts and Sara Fissolo (BSc) of MKO, to carry out kick sampling on the Trusky stream and to obtain aerial imagery of the proposed development site using drone footage. An additional ecological walkover of the site was undertaken on the 19th May 2020, this confirmed the results of the surveys that were previously undertaken. This report has been prepared by Sara Fissolo. The report has been reviewed by Sarah Mullen (BSc, PhD) and by Pat Roberts (BSc, MCIEEM) who has over 14 years' experience in ecological assessment.

The report has been reviewed by Sarah Mullen (BSc, PhD) and by Pat Roberts (BSc, MCIEEM) who has over 14 years' experience in ecological assessment. The following data and information was among that which was considered when carrying out this assessment:

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of ecological information from previous applications on the site.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), EPA and Water Framework Directive (WFD).
- Review of OS maps and aerial photographs of the site of the proposed development.
- Field visits undertaken by MKO ecologists during May 2018, August, September and November 2019, and May 2020.
- Review of the Galway County Development Plan 2015-2021 and all associated Environmental Reports.
- Review of Variation 2(a) of the Galway County Development Plan 2015-2021 and all associated Environmental Reports.
- Review of the Natura Impact Statement that was prepared for the N6 Galway City Ring Road (Arup 2018)]
- Review of the Galway Transport Strategy (2016)

Structure and Format of this NIS

This NIS firstly provides a summary of the findings of the Article 6(3) Appropriate Assessment Screening Report (which clearly identifies the 2 no. European Sites that have the potential to be significantly affected by the proposed development and the pathways by which they might be affected). Following this, the all elements of the project are fully described, as is the baseline environment with respect to the relevant QI/SCIs of the 2 no. “screened-in” European Sites.

Section 5 provides an assessment of the potential for significant effects on the identified European Sites and prescribes mitigation to robustly prevent such impacts.

Section 6 provides an assessment of residual effects, taking into consideration the proposed mitigation.

In Section 7, the potential in-combination effects of the proposed project on European sites, when considered in combination with other plans and projects are considered.

A concluding statement is provided in Section 8.

2. CONCLUSIONS OF APPROPRIATE ASSESSMENT SCREENING REPORT

The Appropriate Assessment Screening report identified the potential for the proposed development to result in significant effects on the following European Sites:

- > Galway Bay Complex cSAC [000268]
- > Inner Galway Bay SPA [004031]

Each of these sites is discussed individually below in terms of the Qualifying Interests/Special Conservation Interests (QIs/SCIs) with the potential to be affected and the pathways by which any such effects may occur.

2.1 Galway Bay Complex cSAC [000268]

The individual pathways for effect that were identified in Table 3.1 of the AA Screening Report (**Appendix 1**) and the QIs with the potential to be affected are described below.

2.1.1 Potential Deterioration of Surface Water Quality

The Trusky Stream is located within the proposed development site boundary. The stream is separated from the main construction footprint by over 10m at its nearest point. However, the development also involves the discharge of surface water from the proposed development, to the Trusky Stream. This involves, the installation of two precast headwalls within the banks of the stream at the location of the two surface water outfalls. There will also be some minor landscaping works including the planting of native species and the construction of a boundary fence along the stream banks. The stream discharges to Galway Bay approximately 1.5km to the west of the cSAC.

The Assimilative Capacity Modelling Study that is included as Appendix I to the AA Screening Report, demonstrates that even in a highly unlikely pollution event, very low levels of pollutant have the potential to enter this designated site via Galway Bay.

However, adopting an extremely precautionary approach, a potential pathway for indirect effects on the aquatic QIs of the European site as a result of deterioration in surface water quality resulting from a potential pollution event associated with the construction and operational activities was identified. A potential pathway for indirect effects was identified for the following aquatic QIs:

- > [1140] Mudflats and sandflats not covered by seawater at low tide
- > [1150] Coastal lagoons*
- > [1160] Large shallow inlets and bays
- > [1170] Reefs
- > [1310] *Salicornia* and other annuals colonising mud and sand
- > [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)
- > [1410] Mediterranean salt meadows (*Juncetalia maritimi*)
- > [1355] Otter (*Lutra lutra*)
- > [1365] Harbour seal (*Phoca vitulina*)

The potential effect requires further assessment and will be considered below under the conservation objectives for the above listed QIs.

2.1.2 Potential Impacts on Otter

A single otter spraint was recorded on the bank of the Trusky Stream during a walkover survey on the 29th November 2019. Whilst there is no evidence that the stream is used extensively by the species and while the site is located in excess of 0.9km (straight line distance) and from the cSAC (1.5km between the mouth of the Trusky Stream and the cSAC via Galway Bay) , adopting a precautionary approach, a potential pathway for effects on otter (*Lutra lutra*) was identified, in the form of disturbance. This effect could potentially arise during both construction and operation of the proposed development. This potential for adverse effects requires further assessment and will be considered below under the conservation objectives for this QI.

2.2 Inner Galway Bay SPA [004031]

The individual pathways for effect that were identified in Table 3.1 of the AA Screening Report (**Appendix 1**) and the SCIs with the potential to be affected are described below.

2.2.1 Potential Deterioration of Surface Water Quality

The Trusky Stream is located within the proposed development site boundary. The stream is separated from the main construction footprint by over 10m at its nearest point. However, the development also involves the discharge of surface water from the proposed development, to the Trusky Stream. This involves, the installation of two precast headwalls within the banks of the stream at the location of the two surface water outfalls. There will also be some minor landscaping works including the planting of native species and the construction of a boundary fence along the stream banks. The stream discharges to Galway Bay approximately 1.5km to the west of the SPA.

The Assimilative Capacity Modelling Study that is included as Appendix I to the AA Screening Report, demonstrates that even in a highly unlikely pollution event, very low levels of pollutant have the potential to enter this designated site via Galway Bay.

However, adopting a precautionary approach, a potential pathway for indirect effects on the aquatic habitats of the SCIs of the European Site as a result of deterioration in surface water quality resulting from a potential pollution event associated with the construction and operational activities was identified. A potential pathway for indirect effects was identified for the aquatic habitat of the SCI species of Galway Bay including the following SCI:

- [A999] Wetlands and Waterbirds

The potential effect requires further assessment and will be considered below under the conservation objectives for the above listed SCI.

3. DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 Site Location

The proposed development site is located in the townlands of Trusky East, Trusky West, Freeport and Ahaglugger, Bearna, Co. Galway, approximately 6km to the west of Galway City (I.G. Ref.: M 23388 23615). The site is accessed via an existing residential development at Trusky East called Cnoc Fraoigh, off the Bearna Road. The subject lands measure approximately 5.38 hectares in area.

The site location is shown in Figure 3.1 and the site in relation to all European sites within 15km is shown in Figure 3.2.

3.2 Characteristics of the Proposed Development

3.2.1 Development Description

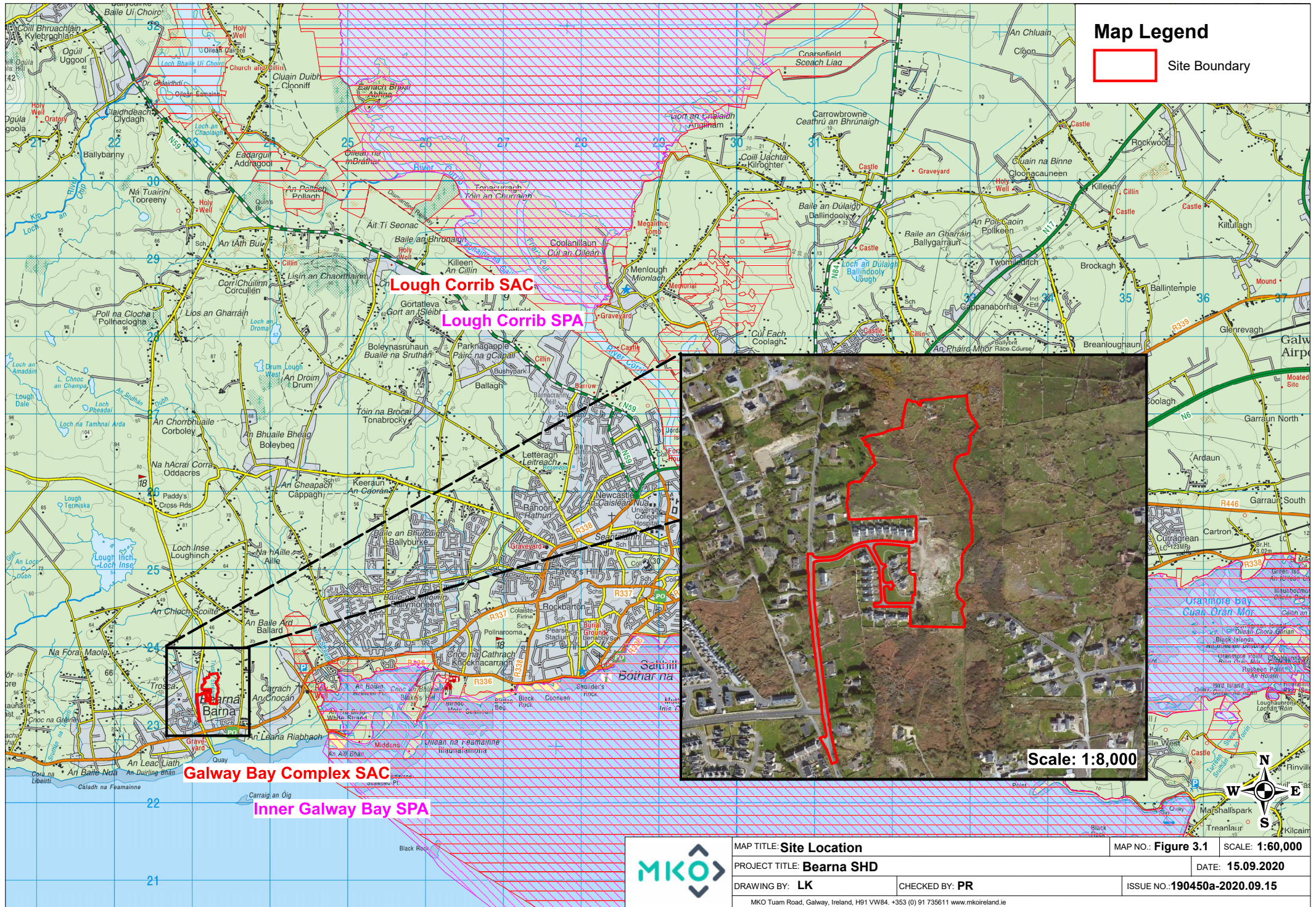
The application for the proposed works will be made under the Strategic Housing Development (SHD) provisions of the Planning and Development (Housing) and Residential Tenancies Act, 2016.

The proposed development will consist of the following:

- 1) Demolition of existing outbuildings
- 2) Construction of 121 no. residential units comprising
 - 52 no. houses (37 no. three-beds, 15 no. four-beds)
 - 4 no. duplex units in Duplex Block D1 (2 no. two-beds (ground floor units) and 2 no. three-beds (2 storey units))
 - 8 no. duplex units in Duplex Block D2 (4 no. two-beds (ground floor units) and 4 no. three-beds (2 storey units))
 - 6 no. duplex units in Duplex Block D3 (3 no. two-beds (ground floor units) and 3 no. three-beds (2 storey units))
 - 14 no. duplex units in Duplex Block D4 (7 no. two-beds (ground floor units) and 7 no. three-beds (2 storey units))
 - 4 no. duplex units in Terrace Block T5 (2 no. two-beds (ground floor units) and 2 no. three-beds (2 storey units))
 - 14 no. Apartments in Apartment Block A1 (5 no. one-beds, 9 no. two-beds)
 - 13 no. Apartments in Apartment Block A2 (4 no. one-beds, 9 no. two-beds and a Multipurpose Room)
 - 2 no. Apartments in Apartment Block A3 (2 no. two-beds)
 - 4 no. Apartments in Apartment Block A4 (4 no. two-beds)
- 3) Development of a crèche facility (224.80 sqm), associated outdoor play areas and parking
- 4) Provision of a footpath connectivity link along the L-1321
- 5) Provision of shared communal and private open space, car and bicycle parking, site landscaping and public lighting, decommissioning of the existing wastewater treatment plant and provision of all services, access from the L-1321 via the Cnoc Fraoigh development and all associated site development works
- 6) Provision of a public linear park along the Trusky Stream.

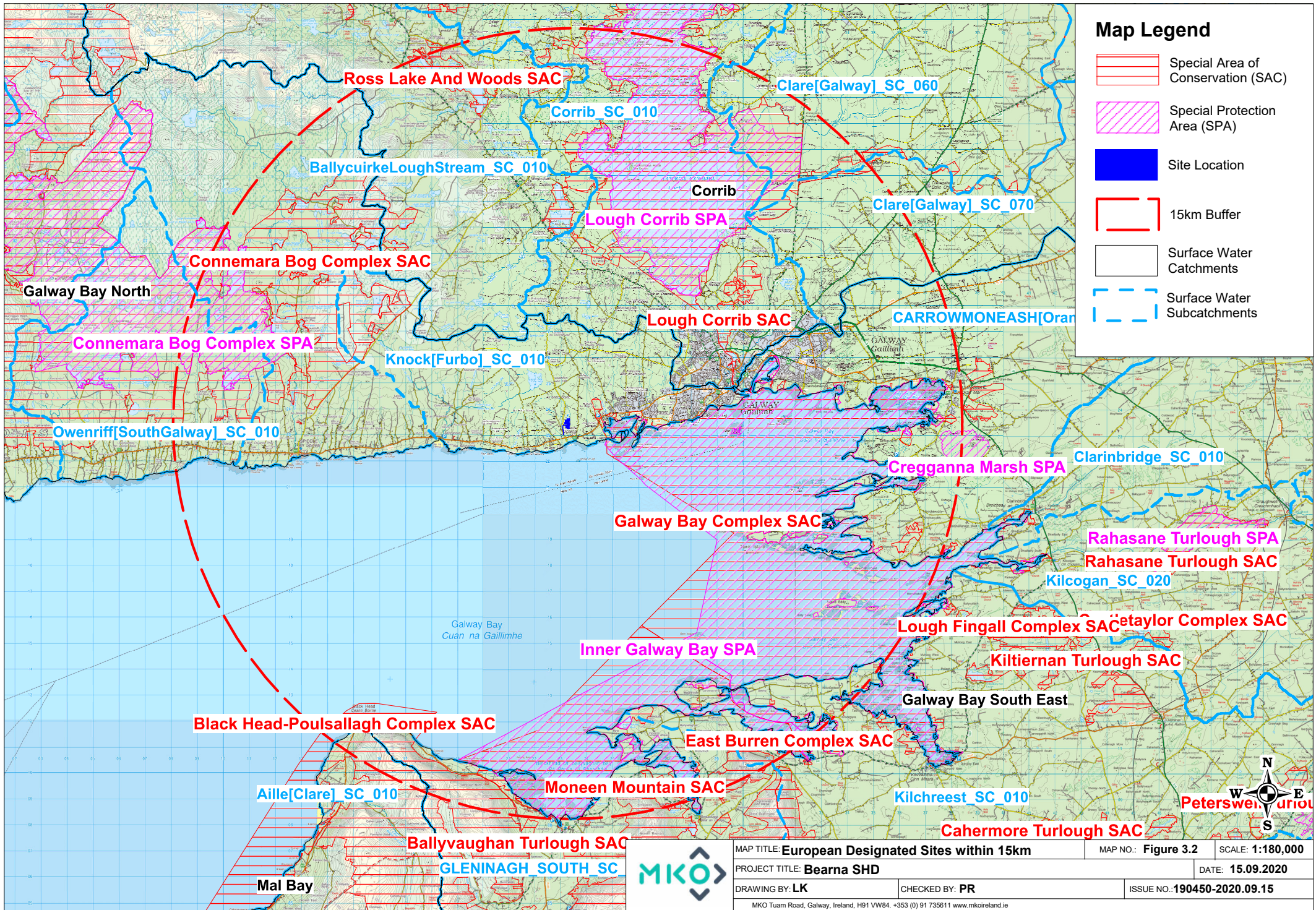
Map Legend

 Site Boundary



Scale: 1:8,000

	MAP TITLE: Site Location	MAP NO.: Figure 3.1	SCALE: 1:60,000	
	PROJECT TITLE: Bearna SHD	DATE: 15.09.2020		
	DRAWING BY: LK	CHECKED BY: PR	ISSUE NO.: 190450a-2020.09.15	
	<small>MKO Tuam Road, Galway, Ireland, H91 VW84. +353 (0) 91 735611 www.mkoireland.ie</small>			



Map Legend

- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Site Location
- 15km Buffer
- Surface Water Catchments
- Surface Water Subcatchments

MAP TITLE: European Designated Sites within 15km		MAP NO.: Figure 3.2	SCALE: 1:180,000
PROJECT TITLE: Bearna SHD			
DRAWING BY: LK		CHECKED BY: PR	
DATE: 15.09.2020		ISSUE NO.: 190450-2020.09.15	
MKO Tuam Road, Galway, Ireland, H91 VW84. +353 (0) 91 735611 www.mkoireland.ie			



The proposed site layout (excluding the footpath and services that are proposed in the public road network to the west and assessed as part of this report) is provided in Drawing 924 MDo-xx-xx-DRA-01101.

3.2.2 Landscape Design

A landscaping plan has been prepared for the development and is included as **Appendix 1** to this NIS. The landscape plan allows for the planting of woodland, treeline, hedgerow and wildflower meadows consisting of a mix of native and naturalised species, as well as pollinator friendly species. A hedgerow consisting of a mix of native and naturalised species will be planted along the southern and eastern boundaries of the site, separating the development from the Trusky stream.

3.2.3 Lighting

The site lighting has been designed to limit the environmental impact of artificial lighting on existing flora and fauna in the area.

The luminaire specified is an LED pole mounted luminaire with NEMA socket and photocell, this fitting was selected for the following reasons:

- Low level lighting
- Minimal upward light spill
- Low voltage LED lamps

Each light fitting shall be controlled via an individual Photoelectric Control Unit (PECU). The operation of the lighting shall be on a dusk-down profile.

3.2.4 Water Management

An Engineering Services Report; with regard to the onsite treatment of wastewater, drainage and surface water for this development has been completed by O'Connor Sutton Cronin & Associates (OCSC) Multidisciplinary Consulting Engineers and is submitted with this planning application. The drainage layout drawing is included in **Appendix 2** to this NIS.

Surface Water

The surface water drainage system has been designed using Sustainable Drainage Systems (SuDS) principles. The proposed development has been divided into two catchments as shown in the Drainage Layout Drawing, Appendix 2, each discharging attenuated flows to the Trusky stream. The surface water drainage system will consist of a gravity sewer network that will convey runoff from the roofs and paved areas of the development to outfall manholes, which will discharge at controlled flow rates to the Trusky stream. Discharge will be limited to the greenfield equivalent, $Q_{BAR_{RURAL}}$, runoff rate. This will be achieved using a Hydro-Brake flow restrictor prior to discharging to the Trusky stream. Temporary underground attenuation will also be provided at two separate locations in the form of underground cellular storage units (refer to Drainage Layout Drawing, **Appendix 2**). Attenuation has been designed to temporarily store the surface water run-off for design rainfall events up to, and including, the 1% AEP with a 20% increase in rainfall intensity. Silt traps will be provided for upstream of the attenuation tanks. Surface water will pass through petrol interceptors prior to discharging from the site.

In addition to the above, pervious paving is to be provided for in all driveways which will have a layer of drainage stone underneath to attenuate rainfall runoff from each property prior to entering the main surface water drainage network.

The proposed development will require stormwater discharge to the Trusky Stream at two locations. These works will be located outside the general construction area for the proposed development and the construction methodology for undertaking these works is provided in Section 2.3 below.

Wastewater

Wastewater from the operational phase of the proposed development will discharge to the existing gravity wastewater network at the existing adjacent Cnoc Fraoigh residential estate prior to it exiting the estate (refer to Drainage Layout Drawing Appendix 2). A letter from Irish Water confirming the capacity of the network to accept the additional waste generated by the proposed development is included in Appendix 3 of this report. The foul loadings for the sewers have been evaluated in accordance with the Irish Water Code of Practice for Wastewater Supply.

3.2.5 Flood Risk Assessment

A site specific flood risk assessment (SSFRA) for the development site was undertaken by O'Connor Sutton Cronin & Associates (OCSC) and is submitted as part of this application. The SSFRA concludes at sections 6.1.6, 6.1.7, 6.1.8 and 6.1.9 respectively that:

'All proposed buildings will be located exclusively within (a) lands zoned 'R' (and not subject to Objective CCF6) and (b) Indicative Flood Zone C (as identified in Variation No.2(a) Galway County Development Plan 2015-2021 Bearna Plan); and outside (c) the predicted flood extent for the 0.1% AEP flood event (refer to Report B861-OCSC-XX-XX-RP-C-0003). The architectural drawings for the proposed development (refer to Drawing 924-MDO-ZZ-ZZ-DR-A-011001), show the proposed ground floor Finished Floor Levels. These floor levels have been selected to provide at least 500mm freeboard over the adjacent 1.0%AEP flood water levels, in accordance with GDSDS recommendations.'

'Tidal/coastal flooding risk has been assessed and found to be not present at the subject site.'

'The provision of a robust drainage network and the design of roads to provide overland flow routes away from existing and proposed buildings, as detailed on Drawings B861-OCSC-XX-XX-C-DR-0500 and B861-OCSC-XX-XX-C-DR-0106 and in the Engineering Services Report B861-OCSC-XX-XX-RP-C-0001, will mitigate the risk of pluvial flooding.'

'In circumstances where the proposed drainage system is constructed as designed (in accordance with the relevant standards and regulations), the flood risks arising from the proposed drainage infrastructure will be negligible and no further mitigation is required.'

'The flood risk represented by ground water is negligible and no further mitigation is required.'

The recommendations contained within the SSFRA have been followed in the design of the proposed development and it will be constructed and operated in accordance with relevant standards, as detailed in the SSFRA.

4. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

The ecological surveys that were undertaken to inform this NIS are fully described in this section. A general description of the ecology of the site of the proposed development is provided in the AA Screening Report that accompanies this application (and which should be read in conjunction with this NIS). The specific surveys that were undertaken to assess the potential effects on the identified European Sites are described below.

4.1 Ecological Survey Methodologies

4.1.1 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data including the following:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), EPA, Geological Survey of Ireland (GSI),
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of ecological information from previous applications on the site.
- Review of OS maps and aerial photographs of the site of the proposed project.
- Review of the Site Synopses and Site-Specific Conservation Objectives (SSCOs) for European Sites identified within the Appropriate Assessment Screening Report (AASR) as being within the Likely Zone of Impact.
- Review of the Galway County Development Plan 2015-2021 and all associated Environmental Reports.
- Review of Variation 2(a) of the Galway County Development Plan 2015-2021 and all associated Environmental Reports.
- Review of the Natura Impact Statement that was prepared for the N6 Galway City Ring Road (Arup 2018)]
- Review of the Galway Transport Strategy (2016)

4.1.2 Scoping and Consultation

The Development Applications Unit (DAU) of the Department of Culture, Heritage & The Gaeltacht was consulted by email on the 16th October 2019. A response was received on the 11th December 2019. No observations or recommendations with regard to the ecology of the site were included in the response. A further Scoping Document was sent to the DAU in July 2019, but no response was received at the time of writing (October 2019). The DAU were consulted in respect of a previous application on this site and a response was received on the 3rd September 2018. This response is provided in full in Appendix 4. One point of relevance to this NIS is a point was raised and this is provided below:

The proposed development is approximately 950m west of the European site, Galway Bay Complex SAC (site code 00268) and Inner Galway Bay SPA (site code 004031). It is recommended that the Board would consider if the the proposed development would have indirect or cumulative effects on these European sites, including as a result of increased amenity and recreational pressures near the margins of Galway City; the growing infrastructural needs, including roads and cycleways; and the wastewater from the site which will be treated in and discharge to Galway Bay and to the SAC and SPA.

These issues have been fully addressed in this NIS. The proposed development has been designed in full compliance with the Galway County Development Plan and its amendments (including 2(a), which applies specifically to Bearna). These plans have all been the subject of Appropriate Assessment. This ensures that the infrastructural needs (including recreational and amenity needs) associated with development in the Bearna area have been assessed at the plan level. The currently proposed project provides for on-site recreation, amenity and open space, has been assessed cumulatively with other plans and projects (see section 7 of this NIS) and is in full compliance with all the relevant plans.

With regard to wastewater, as stated above, a letter from Irish Water confirming the capacity of the network to accept the additional waste generated by the proposed development is included in Appendix 3 of this report. The foul loadings for the sewers have been evaluated in accordance with the Irish Water Code of Practice for Wastewater Supply.

4.1.3 Ecological Multidisciplinary Walkover Surveys

An initial multidisciplinary walkover survey was conducted on the 29th May 2018 by Pat Roberts (BSc, MCIEEM) of MKO in line with NRA (2009) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*). The site was revisited on the 30th August and 19th September 2019 by Pat Roberts. The ecological surveys were undertaken within the optimal time of year to undertake a habitat and flora survey (Smith et. al 2011).

The site was revisited again by Pat Roberts and Sara Fissolo on the 29th of November 2019. During this visit, kick sampling was undertaken in the Trusky stream in order to assess aquatic macroinvertebrate diversity and obtain a Q-value for the stream. During this visit aerial imagery of the site was also obtained using drone footage to complement the multi-disciplinary walkover survey results.

An additional multi-disciplinary survey was undertaken on the 19th May 2020 to verify the results from the previous surveys.

Following the ecological multi-disciplinary surveys undertaken, no requirement for further detailed ecological surveys with relevance to this NIS was identified, other than those that are described below. For example, the site of the proposed development did not provide significant habitat for bird species, such as those that are among the Special Conservation Interests of nearby SPAs and there is no requirement for dedicated bird surveys.

Habitats were identified in accordance with the Heritage Council's '*Guide to Habitats in Ireland*' (Fossitt, 2000). Plant nomenclature for vascular plants follows '*New Flora of the British Isles*' (Stace, 2010). During the multidisciplinary surveys, a search for Invasive Alien Species (IAS) listed as Non-native species subject to restrictions under the Third Schedule to the European Communities (Birds and Natural Habitats) Regulations 2011 [S.I. 477 of 2011], as amended, was also conducted.

4.1.4 Otter Survey

An otter survey of the Trusky stream was conducted in November 2019 and again in May 2020 as per NRA (2009) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*) in order to determine the presence or absence of otter signs within the areas identified as having potential to support the species. This involved a search for all otter signs, e.g. spraints, scat, prints, slides, trails, couches and holts, along the Trusky stream both upstream and downstream of proposed development site. In addition to the riverbank, a 10m riparian buffer was considered to comprise part of the otter habitat (NPWS 2009, *Threat Response Plan: Otter* (2009-2011)).

4.1.5 Aerial Survey

A drone survey was conducted on the 29th of November 2019 to complement the findings of the multidisciplinary walkover surveys. The drone used for the survey was a Phantom 4 Pro V2.0 (DJI, IAA Reg: IE125023).

The drone survey was undertaken in accordance with IAA guidelines [S.I. 563 of 2015], as well as Aeronautical Notice AN U 01 (Drone Registration). A third-party software, DroneDeploy, was used for the duration of the flight, which involves automated flight over the study area to ensure that the correct number of photographs can be taken to allow stitching of an orthomosaic map. The flight was undertaken in an uncontrolled airspace (Class G) and therefore did not require a Specific Operating Permission, as the flight was in compliance with S.I 563 of 2015. NOTAMs and weather conditions were checked prior to flying. Windspeeds were suitable for flying (i.e. less than 20 knots), no precipitation occurred and there was no notice to airmen or temporary restricted areas (TRAs) within the survey area.

4.2 Results of Ecological Surveys

4.2.1 Desk Study Results

The proposed development is located at Trusky East, Bearna, Co. Galway. The nearest European Sites are Galway Bay Complex cSAC and Inner Galway Bay SPA which are located 0.9km and 1.3 km respectively in a straight line by land from the proposed development (Hydrological distance between the mouth of the Trusky Stream and the SPA 1.5 km).

The Trusky Stream is located within the proposed development site boundary. The stream is separated from the main construction footprint by over 10m at its nearest point. However, the construction works also involve the discharge of surface water from the proposed development, to the Trusky Stream. This involves, the installation of two precast headwalls within the banks of the stream at the location of the two surface water outfalls. There will also be some minor landscaping works including the planting of native species and the construction of a boundary fence along the stream banks. The stream discharges into Galway Bay, approximately 690m downstream of the development site. The discharge point is located approximately 1.5km west of Galway Bay Complex cSAC and Inner Galway Bay SPA.

Additional information from the desk study, including information on water quality in the Trusky stream and information on European Sites in the Likely Zone of Impact of the development is presented below.

4.2.1.1 EPA Water Quality Data

The EPA Envision map viewer was consulted on the 9th October 2020 regarding the water quality status of the Trusky stream. The Biotic Index of Water Quality (BIWQ) was developed in Ireland by the Environmental Protection Agency (EPA). Q-values are assigned using a combination of habitat characteristics and structure of the macro-invertebrate community within the waterbody. Individual macro-invertebrate families are ranked according to their sensitivity to organic pollution and the Q-value is assessed based primarily on their relative abundance within a sample. No Q value data was available for this waterbody. The stream had an unassigned WFD status 2010-2015.

4.2.1.2 N6 Galway City Ring Road Surveys

The Natura Impact Statement undertaken for the N6 Galway City Ring Road (N6GCRR) was also consulted. A fisheries assessment of watercourses along the corridor of the proposed N6 Galway City Transport Project was conducted by Triturus Environmental Services: baseline biological water quality (i.e. Q-values) were collected at each watercourse crossing where suitable habitat existed, also to help

relate water quality baselines to fish population data (i.e. clean water salmonid etc.). The Trusky Stream was surveyed at its upper and lower reaches. According to the report (N6 GTP Fisheries Assessment, 2018):

*‘The upper reaches of the catchment channels were largely dry with the exception being the tributary at An Chloch Scoilte north of Bearna Village that had shallow flowing water. The kick sample collected here on the Trusky Stream had a very low diversity of macro-invertebrates (n=5), possibly as a consequence of being seasonal (likely dries up in warm years) and also as a result of evident organic enrichment. The species composition was dominated by *Aselus aquaticus* and *Gammarus duebenii* and had no clean water stoneflies, mayflies or cased caddis species present. As such a Q rating of 3 was recorded in the Trusky Stream.’*

And

*‘a secondary site (2B) was surveyed downstream at Bearna Village, where greater flows of water and a larger channel were present given that the site was below the confluence of three smaller tributaries. This section of channel was tidal (on spring tides) and proved to be an excellent nursery for flounder *Platichthys flesus*, European eel and three-spined stickleback *Gasterosteus aculeatus*. Small numbers of adult brown trout *Salmo trutta* were also present. The brown trout population was small with only two fish present and given the limited better quality habitat available upstream the total stream population size must also be comparably small. Some moderate to good quality spawning habitat did exist in the lower 100m of the stream catchment. This area is likely to be the main area for recruitment in the stream given the poor quality upstream salmonid habitat.’*

The Fisheries Evaluation of Watercourses for the Trusky stream was regarded as of Local Importance (higher value) for salmonids, European eel and as a nursery for flounder. No potential for lamprey to occur exists.

4.2.1.3 Galway Bay Complex cSAC [000268]

The Conservation Objectives document (Version 1, April 2013) and Natura 2000 Data Form for this site as available on the NPWS website were reviewed during this assessment.

4.2.1.3.1 Review of Conservation Objectives

The relevant QIs and the associated conservation objectives of the site are presented in Table 4-1. The Targets and Attributes for the relevant habitats and species, as described in the Galway Bay Complex cSAC Conservation Objectives supporting documents, were reviewed and considered in this assessment and are provided in Section 6 of this NIS.

Table 4-1 Qualifying Interests and Conservation Objectives (Version 1, 2013)

Qualifying Interest	Conservation Objective
Mudflats and sandflats not covered by seawater at low tide [1140]	To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Galway Bay Complex SAC.
Coastal lagoons [1150]	To restore the favourable conservation condition of Coastal lagoons in Galway Bay Complex SAC.
Large shallow inlets and bays [1160]	To maintain the favourable conservation condition of Large shallow inlets and bays in Galway Bay Complex SAC.
Reefs	To maintain the favourable conservation condition of Reefs in Galway Bay Complex SAC.
<i>Salicornia</i> and other annuals colonising mud and sand [1310]	To maintain the favourable conservation condition of <i>Salicornia</i> and other annuals colonizing mud and sand in Galway Bay Complex SAC.
Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) [1330]	To restore the favourable conservation condition of Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) in Galway Bay Complex SAC.
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]	To restore the favourable conservation condition of Mediterranean salt meadows (<i>Juncetalia maritimi</i>) in Galway Bay Complex SAC.
Otter <i>Lutra lutra</i> [1355]	To restore the favourable conservation condition of Otter in Galway Bay Complex SAC.
Harbour seal <i>Phoca vitulina</i> [1365]	To maintain the favourable conservation condition of Harbour Seal in Galway Bay Complex SAC.

4.2.1.3.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to effect on the Galway Bay Complex cSAC were reviewed and considered in relation to the proposed works. These are provided in Table 4-2. ‘Discharges (E03)’ associated with the proposed development has the potential to impact on the European site.

Table 4-2 Site-specific threats, pressures and activities with potential to have effects on the Galway Bay Complex cSAC

Negative Impacts		
Rank	Threats and pressures [code]	Inside/outside/both [i] o [b]
M	J02.02.02 - estuarine and coastal dredging	i
L	E03.03 - disposal of inert materials	i
M	A02.01 - agricultural intensification	i
H	D03 - shipping lanes, ports, marine constructions	i
L	G01.01.02 - non-motorized nautical sports	i
M	A04.02.02 - non intensive sheep grazing	i
L	G02.01 - golf course	i
L	D03.01.01 – slipways	i
H	H01.08 - diffuse pollution to surface waters due to household sewage and waste waters	b
L	J02.05.01 - modification of water flow (tidal & marine currents)	b
L	D01.01 - paths, tracks, cycling tracks	i
H	H01.05 - diffuse pollution to surface waters due to agricultural and forestry activities	b

M	F01 - Marine and Freshwater Aquaculture	b
M	I01 - invasive non-native species	b
M	C01.01 - Sand and gravel extraction	i
L	D03.01.01 – slipways	i
M	F06 - Hunting, fishing or collecting activities not referred to above	i
M	J02.01.02 - reclamation of land from sea, estuary or marsh	i
L	F02.03.01 - bait digging / collection	i
L	J02.02.02 - estuarine and coastal dredging	i
M	D02.02 - pipe lines	i
M	C01.01.02 - removal of beach materials	i
H	D03.01.04 - industrial ports	i
H	J02.12.01 - sea defense or coast protection works, tidal barrages	i
M	A04.02.01 – non intensive cattle grazing	i
Positive Impacts		
M	J02.05.01 - modification of water flow (tidal & marine currents)	b

Rank: H = high, M = medium, L = low
 i = inside, o = outside, b = both

4.2.1.3.3 Qualifying Interests' Specific Information

Mudflats and sandflats not covered by seawater at low tide [1140]

The extent of this habitat is illustrated on Map 3 of the Site-Specific Conservation Objectives (SSCOs) document (NPWS 2013). According to the Natura 2000 Form, 744.29ha of this habitat are present within the cSAC. The Annex I habitat Large shallow inlets and bays is a large physiographic feature that may wholly or partly incorporate other Annex I habitats including mudflats and sandflats and reefs within its area.

Coastal lagoons [1150]

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2013), Coastal lagoons are known to occur within the cSAC. A distribution map is available for this habitat within the SSCO (Map 4). According to the Natura 2000 Form, 76.67ha of this habitat are present within the cSAC.

Large shallow inlets and bays [1160]

The extent of this habitat is illustrated on Map 5 of the site-specific conservation objective document (NPWS 2013). According to the Natura 2000 Form, 10824.50ha of this habitat are present within the cSAC. The Annex I habitat Large shallow inlets and bays is a large physiographic feature that may wholly or partly incorporate other Annex I habitats including mudflats and sandflats and reefs within its area.

Reefs [1170]

The extent of this habitat is illustrated on Map 6 of the SSCO (NPWS 2013). According to the Natura 2000 Form, 2772.70ha of this habitat are present within the cSAC. The Annex I habitat Large shallow inlets and bays is a large physiographic feature that may wholly or partly incorporate other Annex I habitats including mudflats and sandflats and reefs within its area.

Salicornia and other annuals colonising mud and sand [1310]

The extent of this habitat is illustrated on Map 9 of the SSCOs (NPWS 2013). According to the site-specific conservation objectives (NPWS, 2013) the extent of this habitat within Galway Bay Complex cSAC is estimated as 1.347ha, based on data from the Saltmarsh monitoring Project (McCorry and Ryle, 2009). This habitat was recorded at eight of the ten sub-sites surveyed with Galway Bay Complex cSAC. According to the site-specific conservation objectives (NPWS, 2013), further unsurveyed examples of this habitat may occur within the cSAC.

Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]

The extent of this habitat is illustrated on Map 9 of the SSCOs (NPWS 2013). According to the Natura 2000 Form, 263.80ha of this habitat are present within the cSAC based on data from the Saltmarsh monitoring Project (SMP) (McCorry and Ryle, 2009). This habitat was recorded at ten of the ten sub-sites surveyed with Galway Bay Complex cSAC.

Mediterranean salt meadows (*Juncetalia maritimi*) [1410]

The extent of this habitat is illustrated on Map 9 of the SSCOs (NPWS 2013). . A distribution map is available for this habitat within the SSCO (Map 4). According to the Natura 2000 Form, 19.89ha of this habitat are present within the cSAC based on data from the Saltmarsh monitoring Project (SMP) (McCorry and Ryle, 2009). This habitat was recorded at six sub-sites surveyed within Galway Bay Complex cSAC.

Otter *Lutra lutra* [1355]

The extent of terrestrial commuting otter habitat is illustrated on Map 11 of the SSCOs (NPWS 2013). According to the site-specific conservation objectives (NPWS, 2013) the extent of terrestrial habitat within Galway Bay Complex cSAC is estimated as 262ha, above high-water mark. These areas are mapped to include a 10m terrestrial buffer above the high-water mark along shorelines

Harbour seal *Phoca vitulina* [1365]

The extent of Seal habitat and breeding, moulting and resting sites is illustrated on Map 12 of the SSCOs document (NPWS, 2013). The harbour seal population monitoring program recorded a maximum count of 105 individuals in Oranmore Bay in 2009 and 122 individuals in 2010 (NPWS, 2010; NPWS 2011). According to the site's Conservation Objectives supporting document, harbour seals in Galway Bay Complex cSAC occupy both aquatic habitats and intertidal shorelines that become exposed during the tidal cycle. The species is present at the site throughout the year during all aspects of its annual life cycle, which includes breeding (May to July approx.), moulting (August to September approx.) and non-breeding foraging and resting phases.

4.2.1.4 Inner Galway Bay SPA [004031]

The Conservation Objectives document (Version 1, May 2013) and Natura 2000 Data Form for this site as available on the NPWS website were reviewed during this assessment. Information in relation to site specific pressures and threats and the SCIs of the SPA is also detailed below.

4.2.1.4.1 Review of Conservation Objectives

The relevant SCIs and the associated conservation objectives of the site are presented in Section 5. The Targets and Attributes for the relevant habitats and species, as described in the Inner Galway Bay SPA Conservation Objectives supporting documents, were reviewed and considered in this assessment.

Table 4-3 Special Conservation Interests and Conservation Objectives (Version 1, 2013)

Qualifying Interest	Conservation Objective
Wetlands and Waterbirds [A999]	To maintain the favourable conservation condition of wetland habitat in Inner Galway Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

4.2.1.4.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to effect on the cSAC were reviewed and considered in relation to the proposed works. These are provided in Section 6. ‘Discharges (E03)’ associated with the proposed development has the potential to impact on the cSAC.

Table 4-4 Site-specific threats, pressures and activities with potential to have effects on the SPA

Negative Impacts		
Rank	Threats and pressures [code]	Inside/outside/both [i] o [b]
H	E03 – Discharges	i
M	G01.02 - Walking, horseriding and non-motorised vehicles	i
M	F01 - Marine and Freshwater Aquaculture	i
M	F02.03 - Leisure fishing	i
M	G01.01 - Nautical sports	i
H	E01 - Urbanised areas, human habitation	o
M	D01.02 - Roads, motorways	o
M	E02 - Industrial or commercial areas	o
L	F03.01 - Hunting	i
H	J02.01.02 - Reclamation of land from sea, estuary or marsh	i
M	A08 - Fertilisation	o
L	A04 - Grazing	i
M	J02.12 - Dykes, embankments, artificial beaches, general	i
Positive Impacts		
M	F01 - Marine and Freshwater Aquaculture	i
M	F02.03 - Leisure fishing	i
M	G01.01 - Nautical sports	i
L	F03.01 - Hunting	i
L	A04 - Grazing	i
M	D01.02 - Roads, motorways	o

Rank: H = high, M = medium, L = low
i = inside, o = outside, b = both

4.2.1.4.3 Special Conservation Interests [SCI] Specific Information

According to the site-specific conservation objectives, the extent of wetland habitat within the SPA was estimated as 13,267ha, using OSI data and relevant orthophotographs (NPWS, 2013). The following relevant extracts have been taken from the NPWS site synopsis and Natura 2000 Data Form for the SPA:

“Inner Galway Bay SPA is a very large, marine-dominated site situated on the west coast of Ireland. The inner bay is protected from exposure to Atlantic swells by the Aran Islands and Black Head. Subsidiary bays and inlets (e.g. Poul-na-clough, Aughinish and Kinvarra Bays) add texture to the patterns of water movement and sediment deposition, which lends variety to the marine habitats and communities. The terraced Carboniferous (Viséan) limestone platform of the Burren sweeps down to the shore and into the sublittoral. The long shoreline is noted for its diversity, and comprises complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Intertidal sand and mud flats occur around much of the shoreline, with the largest areas being found on the sheltered eastern coast between Oranmore Bay and Kinvarra Bay. A number of small islands and rocky islets in the Bay are included within the site.

4.2.2 General description of Ecology of the Development Site

Much of the site is highly modified from its natural condition and is characterised by **Spoil and Bare Ground [ED2]**. The remaining sections primarily consist of a mosaic of **Dry Humid Acid Grassland [GS3]**, **Scrub [WS1]** and **Dense Bracken [HD1]** (Plate 4.1) which showed signs of grazing and trampling from cattle. Typical species in the grasslands included fescues (*Festuca spp.*), sweet vernal grass (*Anthoxanthum odoratum*), meadow foxtail (*Alopecurus pratensis*), self heal (*Prunella vulgaris*), tormentil (*Potentilla erecta*). Species indicative of disturbance and improvement such as nettle (*Urtica dioica*), spear thistle (*Cirsium vulgare*) and hogweed (*Heracleum sphondylium*) were also common. The scrub was dominated by bramble (*Rubus fruticosus agg.*) with some blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*) and gorse (*Ulex europeus*).

Other habitats within the development boundary include **Recolonising Bare Ground [ED3]** (Plate 4.2), two derelict sheds at the north-west corner of the site classified as **Buildings and Other Artificial Surfaces [BL3]** and stone walls throughout the site classified as **Stone walls and other stonework (BL1)**. There are some isolated protrusions of granite bedrock within the site with species such as wild thyme (*Thymus praecox*) and English stonecrop (*Sedum anglicum*) present. Where they exist, these features are very small and often associated with old stone walls. Wall pennywort (*Umbilicus rupestris*) was recorded on the old stone walls along with extensive growth of lichens. Typical species in the recolonizing bare ground habitats included coltsfoot (*Tussilago farfara*), ribwort plantain (*Plantago lanceolata*) and black medick (*Medicago lupulina*) with pineapple weed (*Matricaria discoidea*), daisy (*Bellis perennis*) and herb Robert (*Geranium robertianum*).

A large concrete attenuation tank is located at the southern end of the proposed development site, indicating an existing waste water treatment area. A small patch of **Wet Grassland [GS4]** was also recorded in this area. A small, non native **Tree Line (WL2)** (*Pinus sp.*) is located in the south western corner of the site and is adjacent to the existing housing estate and not connected to any other tree line or hedgerow habitat in the wider area.

The connection to the public sewer and all road and footpath improvement works between the proposed residential site and Bearna village are located in existing road and path infrastructure classified as **Buildings and artificial surfaces (BL3)**.

A section of the Trusky Stream is located within the proposed development site, however it is located over 10 metres at its nearest point to the east of the main construction footprint and is separated from the construction area by a natural vegetation buffer with the riparian zone being largely unaffected. The only works closer than 10metres involve, the installation of two precast headwalls within the banks of the stream at the location of the two surface water outfalls and some minor landscaping works. The stream was classified as a Upland **Eroding River [FW1]**. The watercourse was approximately 1-2 metres wide and was typically less than 0.3m deep throughout most of its length within the proposed development site. The stream is vegetated by species including fool’s watercress (*Apium nodiflorum*), watercress (*Nasturtium officinale*) and the aquatic moss *Fontinalis antipyretica*, while gorse (*Ulex*

europaeus) and bramble (*Rubus fruticosus*) scrub characterised the banks (Plate 4.3) **Wet Grassland [GS4]** habitat grading into **Marsh [GM1]** was identified in small patches along the flood plain of the Trusky stream (Plate 4.4). The species in this habitat are dominated by creeping bent (*Agrostis stolonifera*), floating sweet grass (*Glyceria fluitans*), yellow iris (*Iris pseudacorus*), marsh ragwort (*Senecio aquatica*) and meadowsweet (*Filipendula ulmaria*). The stream discharges to Galway Bay approximately 690m downstream of the proposed development, approximately 1.5km to the west of Galway Bay Complex cSAC and Inner Galway Bay SPA.

No Annex I habitats or Annex II plant species associated with any nearby European Sites were recorded within or adjacent to the proposed development site. No botanical species listed under the Flora (Protection) Order, 2015, listed in the EU Habitats Directive (92/43/EEC) or the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended were recorded on the site.

No Annex I habitats or Annex II plant species associated with any nearby European Sites were recorded within or adjacent to the proposed development site. No species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded during the survey.

No otter resting or breeding sites were identified within the site boundary. However, otter spraint was recorded within the Trusky Stream, and although otter are likely to use this watercourse to some extent for foraging and commuting though due to its small size and nature, it does not provide significant habitat for this species. Otter is listed as a Qualifying Interest of Galway Bay Complex cSAC. No other Annex II species or SCI bird species associated with any nearby European Sites were recorded during the site ecological surveys undertaken. The site did not provide important habitat for any species listed on Annex II of the EU Habitats Directive or Annex I of the EU Birds Directive species or any other bird species that is among the SCIs of any nearby SPA.

In a review of ecological information pertaining to previous SHD planning applications on the site of the proposed development, no indication that the site was of importance to any species that are among the QIs and SCIs of the European Sites that are the considered within this NIS.



Plate 4.1 Scrub, Bracken and Acid Grassland mosaic which characterised the majority of the proposed development site.



Plate 4.2 Spoil and Recolonising Bare Ground at the entrance of the property, together with scrub/bracken/acid grassland mosaic.



Plate 4.3 The Trusky Stream, located at the eastern edge of the proposed development site (outside the main construction footprint).



Plate 4.4 Wet Grassland/Marsh habitat recorded along the margins of the Trusky stream

5. POTENTIAL EFFECTS ON EUROPEAN SITES AND ASSOCIATED MITIGATION

5.1 Potential Effects

5.1.1 Potential for Direct Effects on the European Sites

There will be no direct effects on the Qualifying Interests (QIs) of Galway Bay Complex cSAC or the Special Conservation Interests (SCIs) of Inner Galway Bay SPA. The proposed development site is located 0.9km (straight line distance) from the nearest European Site. The hydrological pathway to the nearest European Site involves travelling 690m down the Trusky Stream and a distance of at least 1.5km through the open waters of Galway Bay. There are no Annex I habitats on site and the site does not provide suitable supporting habitat for SCI bird species. No otter breeding or resting sites were identified within or adjacent to the development site. No potential for direct effects on any European Site exists.

5.1.2 Potential for Indirect Effects on the European Sites

As set out in the Appropriate Assessment Screening Report, adopting a precautionary approach – with absolutely no reliance placed on (a) measures intended to avoid/reduce harmful effects on the European sites, (b) construction management/best practice measures, or (c) any other measures (such as SUDS) which are proposed with no relation to the intention of avoiding or reducing any potentially harmful effects – a potential pathway for indirect effects on the aquatic Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of following European Sites as a result of surface water pollution via the Trusky stream, associated with construction and operational activities was identified:

Galway Bay Complex cSAC

- [1140] Mudflats and sandflats not covered by seawater at low tide
- [1150] Coastal lagoons*
- [1160] Large shallow inlets and bays
- [1170] Reefs
- [1310] *Salicornia* and other annuals colonising mud and sand
- [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)
- [1355] Otter (*Lutra lutra*)
- [1365] Harbour seal (*Phoca vitulina*)

Inner Galway Bay SPA

- [A999] Wetlands

Furthermore, a potential for indirect effects on the QI for Galway Bay Complex cSAC, otter, as a result of disturbance has been identified.

The following subsections identify potential for indirect effects on the above QIs and SCIs associated with these 2 no. European Sites as a result of potential deterioration in water quality and potential disturbance of otter during the construction and operation phases of the proposed development (there will be no decommissioning of the proposed development).

5.1.2.1 Potential Deterioration of Surface Water

A potential pathway for indirect effects on the surface water dependent Qualifying Interests and Special Conservation Interests of Galway Bay Complex cSAC and Inner Galway Bay was identified in the form of deterioration of surface water quality associated with the proposed development. The conduit for these effects to potentially occur is the Trusky Stream that is located to the east of the construction footprint and within the site boundary. The Assimilative Capacity Modelling Study that is included as Appendix I to the AA Screening Report, demonstrates that even in a highly unlikely pollution event, very low levels of pollutant have the potential to enter these European sites via Galway Bay.

However, adopting an extremely precautionary approach, a potential pathway for indirect effects on these European Sites has been identified and following a similarly robust and precautionary approach, any potential effects have been assessed in this NIS.

5.1.2.1.1 Construction Phase

The construction of the development will involve excavations and earth moving which creates the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refueling of excavation machinery. There is also a risk of surface water runoff from bare soil and soil storage areas during construction works.

The Trusky stream is separated from the development by a natural vegetation buffer, with only the proposed outfall works occurring adjacent to the stream. The stream discharges to Galway Bay approximately 690m downstream of the development, approximately 1.5km to the west of Galway Bay Complex cSAC and Inner Galway Bay SPA. Adopting an extremely precautionary approach, the release of suspended solids or spillage of fuels and other pollutants could potentially affect the water quality of Galway Bay Complex cSAC and Inner Galway Bay SPA.

Thus, in the absence of mitigation, and following an extremely precautionary approach, there is potential for adverse effects on the Integrity of the Identified European Sites.

5.1.2.1.2 Operational Phase

During the operational phase, in the absence of mitigation measures, there is potential for deterioration of water quality as a result of untreated surface water run-off from the proposed development. In addition, the proposed development will result in the production of foul sewage and wastewater, which could, if discharged untreated, result in the deterioration of water quality in the Trusky Stream, which following the precautionary principle, provides a link to the identified European sites that are considered within this NIS.

In the absence of mitigation, and following an extremely precautionary approach, there is potential for adverse effects on the integrity of the identified European sites.

5.1.2.1.3 Decommissioning

The proposed project is considered to be permanent. Therefore, no effects with regard to decommissioning are anticipated.

5.1.2.2 Disturbance to Otter

Although no otter resting or breeding sites were identified within or adjacent to the development boundary, an otter spraint was recorded along the Trusky stream during the dedicated surveys, and the stream is utilised by commuting and foraging otter. The potential for disturbance to the otter population associated with Galway Bay Complex cSAC is considered below on a precautionary basis.

Otter are crepuscular in nature and are unlikely to be adversely impacted by the proposed works. The NPWS Threat Response Plan for Otter acknowledges that “Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure.” It also identifies that Otter are known to travel significant distances from streams and lakes in search of new territory and feeding areas.

Channin P (2003)¹ provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to Otters (Jefferies (1987), (Durbin 1993). (Green & Green 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe’s largest oil and gas terminals at Sullom Voe in North Scotland.

Irish Wildlife Manual No 23 (National Otter Survey of Ireland 2004/2005) found no significant relationship between disturbance and otter occurrence. In addition, no significant difference in otter presence was found between sites with and without recreational activity. It also states, “the lowest percentage occurrence was found at the sites with the lowest recorded disturbance!”

Irish Wildlife Manual No 76 (National Otter Survey of Ireland 2010/2012) notes that the occurrence of Otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between Otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes et al. 1991; Bailey & Rochford, 2006).

Nonetheless, adopting an extremely precautionary approach, the potential for the disturbance of otter to result in adverse effects on the Galway Bay Complex cSAC in the absence of any mitigation has been considered in this NIS.

5.2 Mitigation

5.2.1 Mitigation to prevent deterioration of Water Quality during construction

All construction phase mitigation measures are included in a detailed draft Construction Environmental Management Plan (CEMP) that is provided as **Appendix 5** to this NIS, and include the following measures:

5.2.1.1 Site Setup

- A solid boundary fence will be constructed around the construction footprint in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint and the Trusky stream and its associated riparian habitat. No works will be undertaken outside the confines of this fence with the exception of the installation of the two surface water outfalls, which will be undertaken as a separate element of the development that is described below.
- A silt fence will also be attached to this boundary fence. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities.
- The silt fence will comprise a geotextile membrane that will be buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated.

¹ Channin P (2003). *Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.*

- A dedicated site compound will be located within the construction site and will provide appropriate storage for all construction materials and chemicals. Welfare facilities will be provided in the form of portaloo's.
- The compound will be surfaced with a clean stone, to prevent the un-necessary generation of mud.
- A silt fence will be erected on all sides to prevent any run off from the perimeter.
- All materials stored within the compound will be appropriately covered and stored to avoid run-off or pollution. There will be no storage of materials outside the confines of the defined storage compound.
- Topsoil and stone that is to be used in the construction of the development will be stored in a defined and fenced location within the construction site. If necessary, to prevent run off, piles will be surrounded with a silt fence or will be covered. Material that is not re-used will be transported off site to a licensed waste facility.

5.2.1.2 Water Management During Construction

- Whilst significant inundation of surface or ground water is not anticipated, any such water arisings that require pumping out during construction will be discharged to ground within the site through a silt bag at a distance of over 30m from the Trusky Stream. There will be no direct discharge of construction waters to any watercourse.

5.2.1.3 General Construction Best Practice Measures

- If stone or topsoil is imported onto the site, the source material will be screened by a suitably qualified ecologist to verify it is free from any Third Schedule invasive species before transportation to the site.
- Plant machinery will be turned off when not in use.
- Operating machinery will be restricted to the proposed works site area.
- Construction works will be limited to daylight hours and artificial lighting to facilitate works will not be permitted.
- A dust suppression system consisting of a fine mist water spray will be available on site.
- All waste products from demolition will be disposed of at a licensed waste facility.
- All waste, including demolition waste, will be collected in skips and the site will be kept tidy and free of debris at all times.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling.
- All construction waste materials will be stored within the confines of the site, prior to removal from the site to a licenced waste facility.

5.2.1.4 Construction of Stormwater Outfalls to Trusky Stream

The proposed development will require stormwater discharge to the Trusky Stream at two locations. These works will be located outside the general construction area for the project and are the only works that will directly impact on the Trusky Stream. To prevent any potential for significant effects on the Trusky Stream during construction, a silt fence will be erected to form a solid barrier between the proposed pipe laying works and the stream. To construct the surface water outfalls, the installation of two small precast concrete headwalls will be required along the Trusky stream. Non-return valves will be positioned at the outfalls. The following best practice construction measures will be followed to ensure that there are no significant effects on the Trusky Stream as a result of the proposed works:

- Prior to the outset of these works, small defined works areas will be fenced off at the location of each of the storm water outfalls (between the main construction site and the Trusky Stream). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Trusky Stream.
- The necessary pipelaying works will be undertaken within this defined area.

- Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Trusky Stream will be removed to facilitate the construction of the outfall.
- No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- Short sections of the Trusky Stream will be temporarily dammed with sandbags at times of low water. One dam will be constructed immediately downstream of the outfall point and the other, immediately upstream.
- A submersible pump will be used to overpump any flow within the stream from upstream to downstream of the dammed area.
- Any remaining surface water within the dammed area will be pumped to a discharge point over 30m from the Trusky Stream and within the main construction site. It will pass through a silt bag before discharge to ground.
- Machinery will not enter the water, the construction of the outfall will only occur after the dry working area is created.
- The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included).
- The banks and channel bed will be reinstated to avoid erosion or run off of silt.
- Following this the dams will be removed.
- Each surface water discharge point is likely to take less than one day to install.
- Biosecurity measures will be strictly adhered to throughout the proposed works. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work. Where staff are working instream, staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkron Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Sand bags placed instream will not be re-used in other watercourses.

5.2.1.5 Monitoring

The construction works will be monitored at several levels to ensure that the environmental best practice prescribed in the Construction Management Plan (Appendix 5 to this NIS) is fully adhered to and is effective. The following system will be put in place to ensure compliance.

An environmental officer with the responsibility for ensuring the environmental measures prescribed in this document are adhered to will be assigned to the project.

All operatives working on the site will be made fully aware of the environmental responsibilities, conditions and requirements along with a full description of the methods to be employed. This information will be imparted at a dedicated site induction prior to commencing work on the site.

A checklist will be filled in on a weekly basis to show how the measures above have been complied with. Any environmental incidents or non-compliance issues will immediately be reported to the project team.

The construction management team will be regularly monitoring the works and will be fully briefed and aware of the environmental constraints and protection measures to be employed.

The works will be supervised by a suitably qualified ecologist (ECoW) on a regular basis. An audit of the works will be undertaken during the visits and it will be ensured that the prescribed methods are employed. Any potential impacts additional to those predicted will be highlighted and if necessary, additional measures put in place to prevent them. Any deviance from the agreed methodology will be highlighted and if necessary rectified.

Sondes will be put in place in the Trusky Stream upstream and downstream of the works area. These will continuously measure turbidity throughout the construction period. If there is a 10% or greater difference between upstream and downstream turbidity, an alarm will sound and a message will be sent to the site foreman and the ECoW. Works will be ceased until the cause of the difference is identified and (if it is associated with the works) rectified.

The works associated with the construction of the stormwater outfalls will require full time, on-site supervision from the ECoW. The ECoW will be responsible for:

- › Ensuring that the works are carried out in accordance with the approved method statements.
- › Highlighting and discussing any deviations from the agreed plan. Deviations will be agreed with the relevant authorities and the project team in advance of adoption.
- › Taking water samples and turbidity readings as appropriate. Discussing works and preparations with the site staff to ensure that works can be completed as per agreed method statements.
- › Stop works if there are any effects on the Trusky Stream.

5.2.1.6 Biosecurity

- › All machinery will be thoroughly cleaned, dried and disinfected prior to arrival on site and before removal from site post-works using Virkon 1% biocide and departure from the site to prevent the spread of invasive species such as Asian Clam, Zebra Mussel, Crayfish plague.
- › Where staff are working instream (only for the installation of the stormwater outfalls), staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Machinery that has been working within the channel and other equipment used in channel including PPE will be wiped down with 1% solution of Virkon Aquatic or another proprietary disinfection product. This will be carried out daily on completion of the works and/or prior to staff and machinery moving off site. Sand bags placed instream will not be re-used in other watercourses.
- › Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g. Rhododendron, Japanese Knotweed, Giant Rhubarb etc.) by thoroughly washing vehicles prior to entering the site.
- › Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.

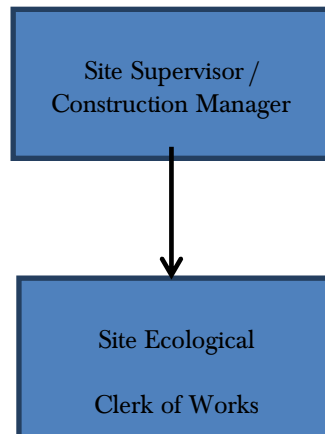
5.2.1.7 Emergency Response Plan

An Emergency Response Plan (ERP) is presented in this section. It provides details of procedures to be adopted in the event of an emergency in terms of environmental protection. The Emergency Response Plan (ERP) provides details of procedures to be adopted in the event of an environmental emergency. The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency.

Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Manager will lead the emergency response which makes them responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented below. In a situation where the Site Manager is unavailable or incapable of coordinating the

emergency response, the responsibility will be transferred to the next person in the chain of command outlined below. This will be updated throughout the various stages of the project.



Emergency Response Procedure Chain of Command

Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction and operational phase of the proposed project. Oil/Fuel spillages are one of the main environmental risks that will exist at the site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, track mats or other material as required.
- Prevention of the spread or flushing away of the spill.
- Cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- Clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the ECoW immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The ECoW will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The ECoW will notify the appropriate regulatory body such as Galway County Council.
- Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.
 - The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
 - A record of all environmental incidents will be kept on file by the ECoW and the Site manager. These records will be made available to the relevant authorities such as Galway County Council.

- The ECoW will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the site manager as appropriate.

5.2.2 Mitigation to prevent deterioration of Water Quality during Operation

An Engineering Services Report; with regard to the onsite treatment of wastewater, drainage and surface water for this development has been completed by O'Connor Sutton Cronin & Associates (OCSC) Multidisciplinary Consulting Engineers and is submitted with this planning application. The drainage layout drawing is included in **Appendix 2** to this NIS

Surface Water

The surface water drainage system has been designed using Sustainable Drainage Systems (SuDS) principles. The proposed development has been divided into two catchments as shown in the Drainage Layout Drawing, Appendix 2, each discharging attenuated flows to the Trusky stream. The surface water drainage system will consist of a gravity sewer network that will convey runoff from the roofs and paved areas of the development to outfall manholes, which will discharge at controlled flow rates to the Trusky stream. Discharge will be limited to the greenfield equivalent, QBAR_{RURAL}, runoff rate. This will be achieved using a Hydro-Brake flow restrictor prior to discharging to the Trusky stream. Temporary underground attenuation will also be provided at two separate locations in the form of underground cellular storage units (refer to Drainage Layout Drawing Appendix 2). Attenuation has been designed to temporarily store the surface water runoff for design rainfall events up to, and including, the 1% AEP with a 20% increase in rainfall intensity. Silt traps will be provided for upstream of the attenuation tanks. Surface water will pass through petrol interceptors prior to discharging from the site.

In addition to the above, pervious paving is to be provided for in all driveways which will have a layer of drainage stone underneath to attenuate rainfall runoff from each property prior to entering the main surface water drainage network.

The proposed development will require stormwater discharge to the Trusky Stream at two locations. These works will be located outside the general construction area for the proposed development and the construction methodology for undertaking these works is provided above.

Wastewater

Wastewater from the development will discharge to the existing gravity wastewater network at the existing adjacent Cnoc Fraoigh residential estate prior to it exiting the estate (refer to Drainage Layout Drawing **Appendix 2**) and ultimately piped to the Mutton Island WWTP. A letter from Irish Water confirming the capacity of the network to accept the additional waste generated by the proposed development is included in **Appendix 3** to this NIS. The foul loadings for the sewers have been evaluated in accordance with the Irish Water Code of Practice for Wastewater Supply.

5.2.3 Mitigation to prevent disturbance of Otter during construction and operation

- Plant machinery will be turned off when not in use.
- All works will be completed during daylight hours and there will be no requirement for artificial lighting at any stage of the proposed construction works. This will avoid any potential impacts on crepuscular or nocturnal species including bat species.

- The Trusky Stream will be fenced off during construction (with the exception of short term works associated with the construction of the surface water outfalls) with no disturbance to the stream or the riparian area.
- The proposed development has been designed to maintain connectivity through the site and along the Trusky Stream with no works proposed within 10 metres of it (with the exception of the construction of two surface water outfalls and some minor landscaping works).
- A landscape plan has been prepared for the operational phase of the development. The landscape plan prescribes the planting of woodland, treeline, hedgerow and wildflower strips consisting of a mix of native and naturalised species, as well as pollinator friendly species. A hedgerow consisting of a mix of native and naturalised species will be planted along the southern and eastern boundaries of the site, separating the development from the Trusky stream. This is described in Section 7.3 of the Landscaping report. This will provide a buffer between any human activity and the Trusky Stream, thereby avoiding the potential for disturbance to otter.

6. ASSESSMENT OF RESIDUAL EFFECTS

The sections below detail the site-specific residual impact assessment in relation to the relevant QIs/SCIs of the 2 no. European Sites “screened-in” in light of their site-specific targets and attributes. The assessment takes into consideration the proposed measures to avoid, reduce and block identified pathways for impact.

6.1 Galway Bay Complex cSAC

The residual effects, following mitigation, on each of the individual Qualifying Interests of the Galway Bay Complex cSAC that were identified as having the potential to be affected by the proposed development are assessed in this section in view of the Conservation Objectives of those habitats and species.

6.1.1 Otter (*Lutra lutra*) [1355]

The attributes and targets for this species as per the Site-Specific Conservation Objectives (SSCOs) for Galway Bay Complex cSAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-1 below.

Table 6-1 Targets and attributes associated with nominated site-specific conservation objectives for Otter (*Lutra lutra*) [1355]

Attribute	Target	Assessment
Distribution	No significant decline	In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on distribution of Otter during both the construction and operational phases of the proposed development.
Extent of terrestrial habitat	No significant decline	The proposed development will not result in the loss of any habitat for this species anywhere within or outside of the cSAC. In addition, there will be no loss of supporting habitat for the species within the proposed project site, which is located outside the cSAC. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on the extent of Otter habitat during all phases via indirect pathways
Extent of marine habitat	No significant decline	
Extent of freshwater (river) habitat	No significant decline	
Extent of freshwater (lake/lagoon) habitat	No significant decline	

		that could otherwise have the potential to lead to deterioration of Otter habitat.
Couching sites and holts	No significant decline	There will be no loss of holting or couching sites within or outside the cSAC as a direct or indirect consequence of the proposed development.
Fish biomass available	No significant decline	In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on fish biomass available during all phases.
Barriers to connectivity	No significant increase	There will be no barriers to movement of otter as a result of the proposed development and thus no potential for barrier effects within the cSAC.

6.1.2 Harbour seal (*Phoca vitulina*) [1365]

The attributes and targets for this species as per the Site-Specific Conservation Objectives (SSCOs) for Galway Bay Complex cSAC (NPWS Version 1 2013) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-2 below.

Table 6-2 Targets and attributes associated with nominated site-specific conservation objectives for Harbour seal (*Phoca vitulina*) [1365]

Attribute	Target	Assessment
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use.	The development is located 0.9km from Galway Bay, straight line distance (1.5km hydrological distance from the mouth of the Trusky Stream to the cSAC). There will be no change in access to suitable habitat as a result of the proposed development.
Breeding behaviour	Conserve breeding sites in a natural condition	The proposed development will not affect breeding, moult or resting sites. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on breeding behaviour, moulting behaviour and resting behaviour of
Moulting behaviour	Conserve moult haul-out sites in a natural condition	
Resting behaviour	Conserve resting haul-out sites in a natural condition	

		distribution of Harbour seal during all phases.
Disturbance	Human activities should occur at levels that do not adversely affect the harbour seal population at the site	The development is located 0.9km straight line distance from the Galway Bay cSAC (1.5km hydrological distance from the mouth of the Trusky Stream to the cSAC)and, at this distance, there is no potential for human activities at or near the site of the proposed development to cause disturbance to this species.

6.1.3 Mudflats and sandflats not covered by seawater at low tide [1140]

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex cSAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in Table 6-3 below.

Table 6-3 Targets and attributes associated with nominated site-specific conservation objectives for Mudflats and sandflats not covered by seawater at low tide [1140]

Attribute	Target	Assessment
Habitat area	The permanent habitat area is stable or increasing, subject to natural processes	There will be no decline in permanent habitat area within the European site as a result of the proposed development. The proposed development is located entirely outside of, and distant from, the cSAC boundary.
Community distribution	Conserve the following community types in a natural condition: Intertidal sandy mud community complex; and Intertidal sand community complex	In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events during all phases, there is no reasonable scientific doubt remaining as to the absence of adverse effects on the community types subject to conservation: namely, Intertidal sandy mud community complex; and Intertidal sand community complex.

6.1.4 Coastal lagoons [1150]

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex cSAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in Table 6-4 below.

Table 6-4 Targets and attributes associated with nominated site-specific conservation objectives for Coastal lagoons [1150]

Attribute	Target	Assessment
Habitat area	Area stable, subject to slight natural variation.	There will be no decline in habitat area or distribution as a result of the proposed development.
Habitat distribution	No decline, subject to natural processes.	
Salinity regime	Median annual salinity and temporal variation within natural ranges	There will be no alteration to the salinity or hydrological regime associated with this habitat as a result of the proposed development.
Hydrological regime	Annual water level fluctuations and minima within natural ranges	
Barrier: connectivity between lagoon and sea	Appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management	No barriers between the lagoons and the sea will be created as a result of the proposed development.
Water quality: Chlorophyll a	Annual median chlorophyll a within natural ranges and less than Njg/L	In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on water quality during all phases.
Water quality: Molybdate Reactive Phosphorus (MRP)	Annual median MRP within natural ranges 0.1mg/L	
Water quality: Dissolved Inorganic Nitrogen (DIN)	Annual median DIN within natural ranges and less than 0.15mg/L	
Depth of macrophyte colonisation	Macrophyte colonisation to at least 2m depth	There will be no alteration of the depth of macrophyte colonisation as a result of the proposed development.
Typical plant species	Maintain number and extent of listed lagoonal specialists, subject to natural variation	In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on typical plant and animal species associated with this habitat during all phases. Moreover, there is no reasonable scientific doubt remaining as to the avoidance of negative indicator species being introduced as a result of the proposed development.
Typical animal species	Maintain listed lagoon specialists, subject to natural variation	
Negative indicator species	Negative indicator species absent or under control	

6.1.5 Large shallow inlets and bays [1160]

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex cSAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in Table 6-5 below.

Table 6-5 Targets and attributes associated with nominated site-specific conservation objectives for Large shallow inlets and bays [1160]

Attribute	Target	Assessment
Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.	<p>There will be no decline in habitat area with the proposed project. The proposed development is located 0.9km straight line distance (1.5km hydrological distance from the mouth of the Trusky Stream to the cSAC) from the cSAC.</p> <p>In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Large shallow inlets and bays Habitat area during all phases.</p>
Community extent	Maintain the extent of the <i>Zostera</i> -dominated community complex and the maërl-dominated community, subject to natural processes.	<p>The proposed development will not affect the communities characterising this habitat, in terms of extent, structure or distribution.</p> <p>In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Community extent, Community structure, <i>Zostera</i> density, and Community distribution during all phases. No other pathways for potential impact on this habitat exist.</p>
Community structure: <i>Zostera density</i>	Conserve the high quality of <i>Zostera</i> -dominated communities, subject to natural processes	
Community structure	Conserve the high quality of the maërl-dominated community, subject to natural processes	
Community distribution	Conserve the following community types in a natural condition: Intertidal sandy mud community complex; Intertidal sand community complex; Fine to medium sand with bivalves community complex; Sandy mud to mixed sediment community complex; Mixed sediment dominated by Mytilidae community complex; Shingle; Furoid-dominated community complex; Laminaria-dominated community complex; and Shallow sponge-dominated community complex.	

6.1.6 Reefs [1170]

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex cSAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in Table 6-6 below.

Table 6-6 Targets and attributes associated with nominated site-specific conservation objectives for reefs [1170]

Attribute	Target	Assessment
Distribution	The distribution of reefs is stable or increasing, subject to natural processes	The proposed development is located 0.9km straight line distance (1.5km hydrological distance from the mouth of the Trusky Stream to the cSAC) from the cSAC. There will be no decline in habitat area or distribution as a result of the proposed development. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Reef habitat area during all phases.
Habitat area	The permanent habitat area is stable, subject to natural processes.	
Community extent	Maintain the extent of the <i>Mytilus</i> -dominated reef community, subject to natural processes.	The proposed development will not affect the communities characterising this habitat, in terms of extent or structure. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Reef Community extent, <i>Mytilus</i> density and Community structure during all phases.
Community structure: <i>Mytilus</i> density	Conserve the high quality of the <i>Mytilus</i> -dominated reef community, subject to natural processes	
Community structure	Conserve the following community types in a natural condition: Furoid-dominated community complex; <i>Laminaria</i> -dominated community complex; and Shallow sponge-dominated community complex	

6.1.7 **Salicornia and other annuals colonising mud and sand [1310]**

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex cSAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in Table 6-7 below.

Table 6-7 Targets and attributes associated with nominated site-specific conservation objectives for *Salicornia* and other annuals colonising mud and sand [1310]

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession	The proposed development is located 0.9km straight line distance

Habitat distribution	No decline, or change in habitat distribution, subject to natural processes	(1.5km hydrological distance from the mouth of the Trusky Stream to the cSAC) from the cSAC. There will be no decline in habitat area or distribution with the proposed project. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Habitat area or distribution of Salicornia and other annuals enclosing mud and sand during all phases.
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions	There will be no alteration to the physical structure of the habitat as a result of the proposed development.
Physical structure: creeks and pans	Maintain, or where necessary restore creek and pan structure, subject to natural processes, including erosion and succession	In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Physical structure of Salicornia and other annuals enclosing mud and sand during all phases.
Physical structure: flooding regime	Maintain natural tidal regime	
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
Vegetation structure: vegetation height	Maintain structural variation within sward	In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Vegetation structure of Salicornia and other annuals enclosing mud and sand during all phases. Moreover, the implementation of those measures will avoid the introduction of common cordgrass during all phases.
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	
Vegetation composition: typical species and sub-communities	Maintain the range of species-poor communities with typical species listed in SMP (McCorry and Ryle, 2009)	
Vegetation structure: negative indicator species - <i>Spartina anglica</i>	There is currently no common cordgrass (<i>Spartina anglica</i>) in this cSAC. Prevent establishment of cordgrass	

6.1.8

Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex cSAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in Table 6-8 below.

Table 6-8 Targets and attributes associated with nominated site-specific conservation objectives for of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]

Attribute	Target	Assessment
Habitat area	Area increasing, subject to natural processes, including erosion and succession.	The proposed development is located 0.9km straight line distance (1.5km hydrological distance from the mouth of the Trusky Stream to the cSAC) from the cSAC. There will be no decline in habitat area or distribution with the proposed project. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Habitat area and distribution of Atlantic salt meadows during all phases.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes.	
Physical structure: sediment supply	Restore natural circulation of sediments and organic matter, without any physical obstructions	There will be no alteration to the physical structure of the habitat as a result of the proposed development. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Physical structure of Atlantic salt meadows during all phases.
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	
Physical structure: flooding regime	Maintain natural tidal regime	
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	There will be no alteration to the vegetation structure of the habitat as a result of the proposed development. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no
Vegetation structure: vegetation height	Maintain structural variation within sward	
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	

Vegetation composition: typical species and subcommunities	Maintain range of sub-communities with the typical species listed in SMP (McCorry and Ryle, 2009)	reasonable scientific doubt remaining as to the absence of adverse effects on Vegetation structure of Atlantic salt meadows during all phases. Moreover, the implementation of those measures will avoid the introduction of common cordgrass during all phases.
Vegetation structure: negative indicator species – <i>Spartina anglica</i>	There is currently no common cordgrass (<i>Spartina anglica</i>) in this cSAC. Prevent establishment of cordgrass	

6.1.9 Mediterranean salt meadows (*Juncetalia maritimi*) [1410]

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex cSAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in Table 6-9 below.

Table 6-9 Targets and attributes associated with nominated site-specific conservation objectives for of Mediterranean salt meadows (*Juncetalia maritimi*) [1410]

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession.	The proposed development is located 0.9km straight line distance (1.5km hydrological distance from the mouth of the Trusky Stream to the cSAC) from the cSAC. There will be no decline in habitat area or distribution with the proposed project. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Habitat area and distribution of Mediterranean salt meadows during all phases.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes.	
Physical structure: sediment supply	Restore natural circulation of sediments and organic matter, without any physical obstructions.	There will be no alteration to the physical structure of the habitat as a result of the proposed development.
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Physical structure of Mediterranean salt meadows during all phases.
Physical structure: flooding regime	Maintain natural tidal regime.	

Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	There will be no alteration to the vegetation structure of the habitat as a result of the proposed development. In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on Vegetation structure of Mediterranean salt meadows during all phases. Moreover, the implementation of those measures will avoid the introduction of common cordgrass during all phases.
Vegetation structure: vegetation height	Maintain structural variation within sward.	
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated.	
Vegetation composition: typical species and subcommunities	Maintain range of sub-communities with the characteristic species listed in SMP (McCorry and Ryle, 2009).	
Vegetation structure: negative indicator species – <i>Spartina anglica</i>	There is currently no common cordgrass (<i>Spartina anglica</i>) in this cSAC. Prevent establishment of cordgrass.	

6.2 Inner Galway Bay SPA [004031]

The residual effects on the individual Special Conservation Interests of the Inner Galway Bay SPA that were identified as having the potential to be affected by the proposed development is assessed in this section in view of the Conservation Objectives of that habitat.

6.2.1 Wetland and Waterbirds

The attributes and targets for the SCI species associated with this SPA were considered. The wetland habitat for these species was considered in the context of Wetland and Waterbirds [A999] this habitat as per the Site Specific Conservation Objectives (SSCOs) for Inner Galway Bay SPA (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in Table 6-10 below.

Table 6-10 Targets and attributes associated with site specific conservation objectives for wetlands [A999]

Attribute	Target	Assessment
Habitat area	The permanent area occupied by wetland habitat should be stable other than that occurring from natural patterns of variation.	In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on the Wetland and Waterbirds habitat area during all phases.

6.3 Overall Assessment of Residual Effects

In view of best scientific knowledge, and on the basis of objective information, in circumstances where the measures which have been identified will be implemented to avoid potential water pollution events, the Project will not adversely affect surface or ground water during either the construction or operation phase. There will be no adverse effects on any QIs/SCIs of the Galway Bay Complex cSAC, or Inner Galway Bay SPA and their associated targets and attributes, or on any European Site. In

addition there will not be any adverse effects on the QI for Galway Bay Complex cSAC – Otter – whether as a result of disturbance, or otherwise. No otter resting or breeding sites were identified within or adjacent to the development and the measures which have been identified will be implemented to avoid potential water pollution events, to ensure that there will be no impacts on this QI as a result of disturbance.

As is apposite in the context of a Stage Two Appropriate Assessment, the consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, results in no reasonable scientific doubt remaining as to the absence of impacts of the Project on any constitutive characteristic of any European site. Accordingly, it can be concluded in view of best scientific knowledge, on the basis of objective information that the Project will not adversely affect the Qualifying Interests/Special Conservation Interests associated with any European Sites, including the following:

- > Galway Bay Complex cSAC
- > Inner Galway Bay SPA

Accordingly, the competent authority is enabled to conclude that the Project will not have an adverse effect on the integrity of any European site.

7. CUMULATIVE EFFECTS

A search for, and review of, plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. Where appropriate, the Strategic Environmental Assessment Reports (SEAs), Environmental Impact Assessment Reports, AA Screening Reports and Natura Impact Statements and Natura Impact Reports that were prepared in association with these plans and projects were also reviewed. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified at the screening stage. This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects.

7.1 Plans

The strategic vision for Bearna village is included within Variation No.2a of the Galway County Development Plan 2015-2021, referred to as “the Bearna Plan”.

The following plans have also been reviewed and are taken into consideration as part of this assessment:

- Galway County Development Plan 2015-2021 (including variations)
- Galway City Development Plan 2017-2023,
- Regional Planning Guidelines for the West 2010-2022,
- National Biodiversity Action Plan 2017-2021.

The review focused on policies and objectives that relate to European Sites and natural heritage (Table 7-1). No potential for cumulative impacts when considered in conjunction with the proposed development were identified.

Table 7-1 Review of plans

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
<p>Galway County Development Plan 2015-2021</p> <p>Variation No.1 to the County Development Plan 2015 - 2021</p> <p>Variation No.2(a) Galway County Development Plan 2015 – 2021 – Bearna Plan</p> <p>The Environmental Supporting Documents associated with this plan and variation 2(a) were considered. These documents included:</p> <p>CGDP 2015-2021 SEA Statement</p> <p>CGDP 2015-2021 Environmental Report</p> <p>CGDP 2015-2021 Natura Impact Report in Support of the AA</p> <p>CGDP 2015-2021 Strategic Flood Risk Assessment</p> <p>Variation 2(a) SEA Statement</p> <p>Variation 2(a) AA determination</p> <p>Variation 2(a) Environmental Report</p>	<p>Objective DS 6 – Natura 2000 Network and Habitats Directive Assessment</p> <p>Protect European sites that form part of the Natura 2000 network (Including Special Protection Areas and Special Areas of Conservation) in accordance with the requirements in the EU Habitats Directive (92/43/EEC), EU Birds Directive (2009/147/EC), the Planning and Development (Amendment) Act 2010, the European Communities (Birds and Natural Habitats) Regulations 2011(SI No.477 of 2011) (and any subsequent amendments or updated legislation) and having due regard to the guidance in the Appropriate Assessment Guidelines 2010 (and any updated or subsequent guidance). A plan or project (e.g. proposed development) within the plan area will only be authorised after the competent authority (Galway County Council) has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and/or a Habitats Directive Assessment where necessary, that:</p> <p>a) The plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or</p> <p>b) The plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those</p>	<p>The Project will not give rise to any adverse effect on any European site. Accordingly, there is no potential for the Project, in combination with any other plan or project, to give rise to an adverse effect on any European site.</p> <p>In circumstances where the Project will not give rise to any adverse effect on any European site, there is no necessity to agree or undertake any compensatory measures to ensure the protection and overall coherence of the Natura 2000 network.</p>

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
<p>Variation 2(a) Natura Impact Report</p> <p>Variation 2(a) NIR Appendix 1</p> <p>Variation 2(a) Strategic Flood Risk Assessment</p>	<p>of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or</p> <p>c) The plan or project will have a significant adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000.</p>	
	<p>Objective DS 10 – Impacts of Developments on Protected Sites Have regard to any impacts of development on or near existing and proposed Natural Heritage Areas, Special Protection Areas and Special Areas of Conservation, Nature Reserves, Ramsar Sites, Wildfowl Sanctuaries, Salmonid Waters, Refuges for Flora and Fauna, Conamara National Park, shellfish waters, freshwater pearl mussel catchments and any other designated sites including future designations.</p>	<p>As this Natura Impact Statement considers only effects on European sites, the information and analysis concerns only Special Protection Areas and candidate Special Areas of Conservation. In that context, there will be no adverse effects on sensitive aquatic receptors listed as QIs/SCI of any European site.</p>
	<p>Objective BNH3 - European Environmental Compliance</p>	<p>There will be no adverse effects on any European site as a result of the Project. Accordingly, the competent authority</p>

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
	<p>All proposed developments shall be in accordance with the Birds and Habitats Directives, Water Framework Directive and all other relevant EU Directives.</p> <p>There are a number of policies relating to the protection, conservation and restoration natural heritage sites including specific objectives relating to the Natura 2000 network.</p> <p>Policy NHB 1 – It is the policy of Galway County Council to support the protection, conservation and enhancement of natural heritage and biodiversity, <u>including the protection of the integrity of European sites, that form part of the Natura 2000 network</u>, the protection of Natural Heritage Areas, proposed Natural Heritage Areas Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries and Conamara National Park (and other designated sites including any future designations) and the promotion of the development of a green/ecological network within the plan area, in order to support ecological functioning and connectivity, create opportunities in suitable locations for active and passive recreation and to structure and provide visual relief from the built environment.</p> <p>Policy NHB 6 - It is the policy of the Council to support the implementation of the National Biodiversity Plan and Galway County Biodiversity Plan and Galway County Heritage Plan in partnership with relevant stakeholders subject to available resources.</p> <p>Objective NHB 1 – Support the protection of habitats and species listed in the Annexes to and/or covered by the EU Habitats Directive (92/43/EEC) (as amended) and the Birds Directive (2009/147/EC), and regularly occurring-migratory birds and their</p>	<p>is enabled to grant permission in accordance with Article 6(3) of the Habitats Directive.</p> <p>The Development plan and related documents were comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network. The proposed development will be in compliance with all relevant policies and objectives of the Galway County Development Plan 2015 -2021 including Policies NHB 1, NHB 6, Objective NHB 1 and NHB 2.</p> <p>The proposed development will not result in any adverse effects on any European site and has been specifically designed to minimise any negative effects on biodiversity. Robust and achievable measures and design features have been put in place to avoid any significant impact on the Trusky Stream, which is the identified conduit by which significant effects on the identified European sites could potentially occur (following the application of the precautionary principle).</p> <p>In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on any European Site during all phases of the development.</p>

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
	<p>habitats and species protected under the Wildlife Acts 1976-2000 and the Flora Protection Order.</p> <p>Objective NHB 2 - Support the protection and enhancement of biodiversity and ecological connectivity within the plan area, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, stonewalls, geological and geo-morphological systems, other landscape features and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones in the context of Article 10 of the Habitats Directive.</p>	<p>Objective 6 of the National Biodiversity Plan seeks to expand and improve the management of protected areas and species. The proposed development will not have any effect on any protected area and so is fully compliant with this policy</p>

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
	<p>Objective BNH3- European Environmental Compliance (Variation 2(a)) All proposed developments shall be in accordance with the Birds and Habitats Directives, Water Framework Directive and all other relevant EU Directives.</p>	<p>The proposed development is in full compliance with all relevant EU Directives including the Birds and Habitats Directive, which are of particular relevance to the NIS</p>

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
	<p>Objective CCF6-Inappropriate Development on Flood Zones (Variation 2(a))</p> <p>Any development proposals submitted for this site will require a detailed ecological report (s), carried out by suitably qualified personnel for the purposes of informing Appropriate Assessment Screening by Galway County Council, the competent authority (in accordance with Objective DS 6 of the Galway CDP 2015-21).</p>	<p>The proposed development is accompanied by the relevant technical reporting including (with relevance to this NIS) detailed ecological reports, carried out by suitably qualified personnel for the purposes of informing Appropriate Assessment Screening.</p> <p>The planning application in respect of the proposed development is compliant with this objective.</p>
	<p>Galway County Development Plan 2015 - 2020 NIR</p> <p>The NIR and associated appendices assess the plan and all its various policies and objectives in respect of their potential to impact on European Sites. The NIR then describes all the mitigation that is in place to avoid such effects and finds that the mitigation is effective in avoiding the identified potential effects</p>	<p>The proposed development has been designed and will be operated in compliance with the Galway County Development Plan 2015 -2021 and therefore will not result in any cumulative adverse effects on European sites when considered in combination with this plan.</p>

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
	<p>Environmental Report and SEA Statement for Variation 2(a) of the Galway City Development Plan 2015 -2021</p> <p>In the absence of mitigation, the Environmental Report and SEA Statement identify the potential significant environmental effects to arise as a result of the proposed variation:</p> <p>Loss of/damage to biodiversity in designated sites (including European Sites and Wildlife Sites) and Annexed habitats and species, listed species, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna; Habitat loss, fragmentation and deterioration, including patch size and edge effects; and Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species.</p> <p>It then lists the measures and monitoring that are in place to ensure that any such potential effects are mitigated and monitored. The statement also references the Stage 2 Appropriate Assessment that was carried out in respect of the variation quotes the conclusion of that assessment.</p> <p>Galway County Development Plan variation 2(a) NIR and AA Determination</p> <p>The NIR and associated appendices assess the variation to the plan in respect of its potential to impact on European Sites. The NIR then describes all the mitigation that is in place to avoid such effects and finds that the mitigation is effective in avoiding the identified potential effects</p> <p>The Galway City Council Appropriate Assessment Determination concludes as follows:</p>	<p>The proposed development has been designed and will be operated in compliance with the Variation 2(a) to the Galway County Development Plan 2015 -2021 and therefore will not result in any cumulative adverse effects on European sites when considered in combination with this variation of the Development Plan.</p> <p>The proposed development has been designed and will be operated in compliance with the Variation 2(a) to the Galway County Development Plan 2015 -2021 and therefore will not result in any cumulative adverse effects on European sites when considered in combination with this variation of the Development Plan.</p>

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
	<p><i>'It is considered that Variation 2(a) to the Galway County Development Plan 2015 – 2021 will not result in effects on the ecological integrity of any European Site'</i></p>	
<p>The Regional Planning Guidelines for the West 2010-2022</p>	<p>EAP13: To support the protection of Natural Heritage Areas, Special Protection Areas, Special Areas of Conservation, Nature Reserves, Ramsar Sites (Wetlands), Wildfowl Sanctuaries, National Parks, Nature Reserves and the biodiversity designated under the Habitats Directive, Birds Directive, Wildlife Act, Flora Protection Order and other designated or future designated sites.</p> <p>EAO18: Support the achievement of favourable conservation status of Annex I habitats, Annex II species, Annex I bird species and other regularly occurring migratory bird species and their habitats in the region.</p>	<p>In the context of a Stage Two Appropriate Assessment, and consideration of the measures which have been identified and which will be implemented to avoid potential water pollution events, there is no reasonable scientific doubt remaining as to the absence of adverse effects on QIs/SCI of the Galway Bay Complex cSAC, and Inner Galway Bay SPA. Accordingly, the Project will support the achievement of favourable conservation status of Annex I habitats, Annex II species, Annex I bird species and other regularly occurring migratory bird species and their habitats.</p>
<p>National Biodiversity Action Plan 2017-2021</p>	<p>Target 6.2 - Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020.</p>	<p>There is no reasonable scientific doubt remaining as to the absence of adverse effects on the constitutive characteristics of the Galway Bay Complex cSAC and Inner Galway Bay SPA</p>

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
		The Project will not impact on the sufficiency, coherence, connectivity and resilience of the Natura 2000 network and will maintain the Trusky stream in good condition.

7.2

Other Projects

MKO conducted a comprehensive review of the Galway County Council planning register and the website of An Bord Pleanála in October 2020 to identify relevant planning applications within the vicinity of the proposed works, most of which relate to the provision of, or improvement of, residential development. These are set out in the Table 7.2 below and have been considered for the purposes of this cumulative assessment.

Table 7-2 Review of relevant projects in Bearna

Planning Search						
Planning Ref.	Applicant	Lodgement Date	Description	Location	Final grant	Zoning
Pre-planning	Michael McDonagh		Bearna Village SHD – Prospective SHD development of approximately 105 units	Freeport, Bearna, Co. Galway.		
ABP-302848-18	Galway County Council	23/10/2018	Galway County Council (“the road authority”) on its own behalf and on behalf of Galway City Council pursuant to an agreement under section 85 of the Local Government Act, 2001 (as amended) and as approved by Transport Infrastructure Ireland (the operational name of the National Roads Authority) pursuant to section 14(8) of the Roads Act 1993 (as amended), has applied under section 51(2) of the Roads Act, 1993 (as amended by section 9(1)(e)(i) of the Roads Act 2007) to An Bord Pleanála (‘the Board’) for approval in relation to a proposed road development consisting of:- <ul style="list-style-type: none"> • A dual carriageway, consisting of 2 	located in the County Galway electoral divisions of:(i) Bearna/Barna, (ii) Bearna [i bParóiste Dlí Rathún]/Barna [in the Civil Parish of Ragoon], (iii) Rathún/Ragoon, (iv) An Daingean/Dangan, (v)		

Planning Search						
			lanes and a hard shoulder in each direction divided by a segregating barrier • A single carriageway, consisting of 1 lane and a hard shoulder in each direction • New link roads • The realignment / improvement of regional, county and local roads crossed by the proposed road development • Localised works to the existing electricity transmission and distribution networks (specifically comprising of the diversion of the 110kV and 38kV services) together with all ancillary and consequential works associated therewith.	Mionlach/Menlough, (vi) An Caisleán Gearr/Castlegar, (vii) Baile an Teampaill/Ballintemple, (viii) Baile an Bhriotaigh/Ballybrit, and (ix) An Baile Bán/Ballybaan		
19/1749	Denalibrook Ltd	08/11/2019	for minor amendments to previously granted planning permissions ref. 17/1314 and 18/1527 for 48 units at An Maolán. Amendments to include; Minor elevation and internal floor plan changes to D type houses (numbers 37 to 47 inclusive) and associated site works. Gross floor space of proposed works: 2187.00 sqm	Na Forái Maola Thoir (Forramoyle East)	Granted subject to 18 no. conditions (17/02/2020)	Residential phase 1
19/314	M. Walsh	06/03/2019	for the construction of 20 no. residential units (4 no. 3 bed semi-detached dwellings & 16 no. 5 bed detached dwellings) including the construction of a new road accessed via the existing Dreasla housing development, infrastructure, ESB Substation and all associated external works. Gross floor space of proposed works: 4461 sqm	An Cnocán Carrach	Granted Subject to 32 no. conditions (13/01/2020)	Open Space/Recreation and Amenity (OS)
16/147	Tribal Investments Ltd.	11/02/2016	for development on site accessed from the main street (R336). The proposed development will consist of the following: (1) modifications and improvements to 2 no. existing 2 storey street front houses, new public footpath and access to the houses, on-street car-parking spaces and boundary treatments. Construction of 1 no. new infill 1 bedroomed terraced house between the existing street front houses (2) demolition of existing partially-built garage structure on the site (3) construction of 15 no. new houses	Rinn Na Mara	Granted subject to 15 no. conditions (02/03/2017)	Village Centre (VC)

Planning Search						
			provided as follows: 4 no. in a terrace and 2 no. semi-detached Type A houses; 2 storey, 3 bedroomed houses with optional future attic conversion; 5 no. in a terrace Type B houses; 2.5 storey 3-bedroomed houses; 4 no. in a terrace Type C houses; 2.5 storey 3-bedroomed houses arranged around a shared landscaped home zone/village green amenity space (4) connection of all houses to existing drainage and watermain services, provision of new access road and associated carparking spaces (gross floor space proposed 2216sqm; retention 224sqm;demolition 68sqm)			
18/148	Seán Ó Chonchobhair	13/02/2018	le haghaidh Forbairt Cónaithe ar shuíomh sa Phríomhshráid (R336). Is éard a bheidh sa fhorbairt ná tógáil na nithe seo a leanas: (1) Comhshó athruithe agus síneadh scioból leath-thréigthe chun freastal ar 1 uimh. (2 leaba), (2) Foirgneamh dhá stór a thógáil chun freastal ar 2 uimh (3 leaba) agus (3) Tógáil 6 uimh. dhá theach agus dhá urláir (3 leaba) teorainneacha (4) Cóireálacha Teorainneacha Athbhreithnithe agus (5) Dúnadh ar bhealaí isteach láithreach agus tógáil bóithre rochtana nua ón bpríomhshráid agus (6) le seirbhísí draenála agus uisce reatha, mar aon le na hoibreacha agus na seirbhísí ar fad a bhaineann leo. Tá RPS Uimh. 748. Struchtúr faoi Chosaint, suite ar an suíomh. Gross floor space of proposed works 1165.6 sqm. (9 no. residential units)	Seapoint, Bearna	Granted subject to 20 no. conditions (13/08/2018)	Village Centre (VC)
17/1305	M O Sullivan	31/08/2017	for the construction of three no. two storey houses (comprising 2 no. 3 bedroom & 1 no. 5 bedroom) including infrastructural sewer connection, vehicular access on waterfront & parking and associated site works.	Freeport	Refused subject to 3 no. reasons (23/02/2018) ABP granted ABP-301244-18	17/1305

Planning Search						
20/771	Eoghan Ó Ceallaigh	22/06/2020	for the demolition of an existing substandard house and for the construction of a replacement dwelling house. Gross floor space of proposed works: 271.8 sqm. Gross floor space of any demolition: 140.6 sqm	Trusky West	Granted subject to 9 no. conditions (13/08/2020)	Existing Residential
20/698	Michelle Lyons	05/06/2020	to construct a dwelling house and domestic garage with a waste water treatment plant, percolation area and all associated site works. Gross floor space of proposed works: 250 sqm House, 60 sqm Garage	Boleybeg	Granted subject to 14 no. conditions (29/07/2020)	
20/135	Billy Archbold & Ruth Storan	06/02/2020	for construction of new two storey house, waste water treatment system, new site access and all associated site works. Gross floor space of proposed works: 207.9 sqm	Truskey West	Granted subject to 8 no. conditions (24/07/2020)	Existing residential
19/1853	Johnathan Lydon	28/11/2019	of alterations to existing planning reference P05/1073. Gross floor space of work to be retained: 107 sqm	Rinn na Mara (Seapoint)	Granted subject to 1 no. condition (06/07/2020)	Village Centre (VC)
19/1687	Breandán MacGearailt	30/10/2019	for alterations to the design of previously approved Planning Reference. P17/731. Gross floor space of proposed works: 249.5 sqm. Gross floor space to be retained: 7.5 sq. Gross floor space of any demolition: 50 sqm	Forramoyle West	Granted subject to 14 no. conditions (03/02/2020)	
19/1680	Deirdre O'Farrell	29/10/2019	for development consisting of the rising of the existing roof with construction of a new dormer extension to the rear plus new front porch and alterations to existing elevations with associated site works. Gross floor space of proposed works: 44 sqm. Gross floor space of work to be retained: 205 sqm	Aille	Granted subject to 6 no. conditions (08/06/2020)	
19/1593	Conor Evans	11/10/2019	for construction of extensions to the front, sides and rear of an existing dwelling with replacement of the roof including amendments to the associated landscaping, boundary walls and fences, and site services. Also permission is sought for an upgrade to a treatment plant and percolation area for the dwelling. Gross floor space of proposed works: 47.8 sqm	Na Forai Maola Thiar	Granted subject to 12. No conditions (29/06/2020)	

Planning Search						
			ground level and 56.2 sqm. Gross floor space of any demolition: 5 sqm (porch) plus walls (amendments)			
19/1546	Pat and Mary Hanley	04/10/2019	for 1. demolition of existing garage to side of house, and construction of 2 storey extension comprising garage and bedrooms, 2. minor elevational changes, and 3. interior alterations. Gross floor space of proposed works: 84 sqm. Gross floor space of work to be retained: 147 sqm. Gross floor space of any demolition: 30 sqm	An Cloch Scoilte	Granted subject to 7 no. conditions (13/01/2020)	
19/1497	Michael O'Grady	27/09/2019	for the construction of a single storey extension at first floor level to the rear of an existing dwelling house. Gross floor space of proposed works: 23.50 sqm	Áth an Ghlugair (Ahaglugger)	Granted subject to 4 no. conditions (09/01/2020)	Existing Residential
19/1437	Mike Walsh	17/09/2019	for a change of house type to that previously granted under pl. ref: 18/1152. The proposed dwelling is to be 1 - 2 storey with all associated site development works. Gross floor space of proposed works: 291 sqm	Knockaunnacarragh	Granted subject to 11 no. conditions (16/12/2019)	Existing Residential
19/1337	Caitríona Ní Chonchobhair	27/08/2019	chun umair gáis a choinneál ar chúl an bhialann reatha (to maintain gas tanks at the rear of the existing restaurant)	Áth an Ghlugair, Bearna	Granted subject to 2 no. conditions (25/11/2019)	Village Centre (VC)
19/1169	S O'Shea	26/07/2019	for alterations and extension to an existing dwelling house to include a two storey and porch extension to the South West, the addition of a first floor over the Kitchen, minor elevational changes and all associated site and external works. Gross floor space of proposed works: 124 sqm. Gross floor space of work to be retained: 250 sqm	Na Foráí Maola Thior	Granted subject to 6 no. conditions (23/03/2020)	Existing Residential and Residential phase 2
19/1123	Alma & Eoghan Ó'Ceallaigh	23/07/2019	for alterations and extensions to an existing single storey dwelling house to include (1) a ground and first floor (attic) level extension to the south, (2) the construction of a new roof and use of the attic level for habitable rooms, (3) conversion of existing attached garage to a bedroom, (4)	Trusky West	Granted subject to 4 no. conditions	Existing Residential

Planning Search						
			associated elevational changes and (5) all associated site works including a new connection to the public sewer. Gross floor space of proposed works: 133.2 sqm			
19/966	Mr Martin Kearney	26/06/2019	Extension of Duration for a new service station to include the following: single storey service station building with shop and ancillary off licence, restaurant, stores, office, sanitary facilities, pump canopy, refuse containment building, service area, underground oil storage tanks, underground rainwater harvesting system, signage, parking and revised boundary treatments and associated works (Gross floor space 298sqm). Previous Planning Reference No. 14/563.	Freeport	Granted (19/08/2019)	Village Centre (VC)
19/713	Paula Kerr	13/05/2019	to make alterations to existing dwelling by constructing a new pitched roof to the front and constructing a single storey extension to the rear including new utility room and bathrooms. Gross floor space of proposed works: 30 sqm	An Baile Ard Thiar (Ballard West)	Granted subject to 6 no. conditions (12/08/2019)	
19/612	Gerry Curran	25/04/2019	for alterations and extension to existing dwelling to form a granny flat with a new dwelling attached and to construct a new effluent treatment system, percolation area, to serve both units and to replace existing septic tank. Gross floor space of proposed works: 158.6 sqm	Forramoyle West	Granted subject to 7 no. conditions (29/07/2019)	
19/218	Breda Fallon	15/02/2019	for the replacement of 3 No. existing split sloped dormer windows with 3 No. boxed dormer windows to an existing two storey dwelling house and associated site works	Boleybeg East	Granted subject to 3 no. conditions (20/05/2019)	
18/1637	Emma Bradley	16/11/2018	of minor elevation alterations to the side extension previously granted under Pl. Ref No. 18/117. Gross floor space of proposed works: 17 sqm. Gross floor space of work to be retained: 185 sqm	Áth an Ghlugair, Barna	Granted subject to 3 no. conditions (17/01/2019)	Existing Residential
18/1639	Barry O'Donovan & Sheila Murphy	16/11/2018	for the demolition of an existing shed and for the construction of a new detached garage (floor area of garage 88.8 sqm) including all associated site works and ancillary	Lacklea	Granted subject to 7	Existing Residential

Planning Search						
			services. Gross floor space of proposed works: 88.80sqm. Gross floor space of any demolition work: 22.49 sqm (Existing shed)		no. conditions (25/02/2019)	
18/1616	Noel Murphy	14/11/2018	to construct a new dwelling and connect to the existing public sewer. Gross floor space of proposed works: 107 sqm	Seapoint	Refused by LA (15/01/2019), Granted by ABP ref. 303685 (28/05/2019)	Village Centre (VC)
18/1527	Denalibrook Ltd	25/10/2018	for minor amendments to previously granted planning permission ref. 17/1314. Amendments to include: (A) Revised site boundary to South, (B) Footprint to previously granted houses 3 to 6 amended to cater for boundary re-alignment, (C) Previously granted Terrace block units 7 to 10 to be redesigned, and (D) associated site work. Gross floor space of proposed works: 911sqm.	Forramoyle East	Granted subject to 18 no. conditions (28/01/2019)	Residential phase 1
18/1250	Mrs. G Greaney & Mr. J Dorgere	04/09/2018	for alterations and extension to existing dwelling house to include: 1) Construction of porch and entrance hall with feature canopy at ground floor level. 2) Addition of bedroom, en-suite and playroom/study room at first floor level. 3) Construction of garage. 4) Retention of garden shed. Gross floor space of proposed works, 95sqm and gross floor space of work to be retained, 164sqm	Seapoint, Barna	Granted subject to 5 no. conditions (03/12/2018)	Existing Residential
18/1211	S. O'Shea	24/08/2018	for alterations and extension to an existing two storey dwelling house to include 1) a 1 1/2 storey extension to the south-west, 2) a single storey porch south-west, 3) associated elevational changes, 4) all associated site and external works. Gross floor space of proposed works, 81sqm.	Forramoyle East	Granted subject to 7 no. conditions (26/11/2018)	Existing Residential

Planning Search						
18/910	T. Lydon	28/06/2018	for 1) the demolition of an existing dwellinghouse and 2) the construction of a two storey mixed use building consisting of 3 no. ground floor retail units and 3 no. first floor office units and 3) removal of palisade fencing, together with all associated access, parking, landscaping, signage, site works and services on an infill and brownfield development site previously permitted under PL. Ref. No. 16/294. Gross floor space of proposed works 753.50 sqm. Gross floor space of any demolition 68.5 sqm.	Freeport, An Chéibh	Granted subject to 17 no. conditions	Village Centre
18/750	Roisin O'Flynn	01/06/2018	Retention for roadside boundary wall and existing access point as constructed with all associated works and ancillary services.	Trusky West	Granted subject to 4 no. conditions	
18/712	Galway Coast Cottages	30/05/2018	for 1) demolition of existing old building and 2) construction of 3 no. terraced holiday units and all ancillary works. Gross floor space of proposed works 303.6 sqm. Demolition 90sqm	Forramoyle East	Granted subject to 7 no. conditions (03/09/2018)	Existing Residential
18/688	Aoife Duffy	25/05/2018	for construction of new dwelling house, treatment system and percolation area, and all associated site works and for retention of unauthorized groundworks, importation of fill and trackway. Gross floor space of proposed works (house) 240 sqm. (garage) 25 sqm.	Forramoyle East	Granted subject to 11 no. conditions (18/02/2019)	Residential phase 2
18/505	Breege Creaven & Mick Doneghan	25/04/2018	for a serviced dwelling house including new site access, connection to services and all ancillary site works. Gross floor space of proposed works 140 sqm.	Freeport	Granted subject to 11 no. conditions	Existing Residential
18/487	Aengus & Nicole Burns	23/04/2018	for a single storey rear extension. Gross floor space of proposed works 38.96 sqm.	Trusky West	Granted subject to 13 no. conditions	Existing residential
18/335	Roisin O'Flynn	21/03/2018	for dwelling house, garage/shed and private wastewater treatment system with all associated works and ancillary services. Gross floor space of proposed works (house) 200 sqm. (garage) 48 sqm.	Trusky West	Granted subject to 13 no. conditions	

Planning Search						
18/117	Emma Bradley	08/02/2018	for the construction of a single storey side extension to an existing dwelling house. Gross floor space of proposed works 17 sqm.	Barna	Granted subject to 5 no. conditions (07/05/2018)	Existing Residential
18/64	Jim Hickey	25/01/2018	for development to consist of 1) construction of front porch; 2) construction of shed; 3) retention of alterations to extension previously granted under 07/3572 and 12/1299. Gross floor space of proposed works 50 sqm	Forramoyle West, Barna	Granted subject to 6 no. conditions (23/04/2018)	Existing Residential
17/1872	Caitríona Ní Chonchobhair	22/12/2017	This development will consist of (1) Permission for a change of use of the ground floor, from retail to a sitting restaurant. (2) Permission for change of use of first floor from ancillary retail area to restaurant storage area. (3) Permission for additional surface parking to the rear of the site and (4) Permission for revised elevation signage, together with associated site works and services. Gross floor space of proposed works 198.9sqm.	Bearna	Granted subject to 7 no. conditions (02/04/2018)	
17/1865	Michael & Roisin O'Donnell	21/12/2017	to construct a dwelling house, domestic garage and all associated services. Gross floor space of proposed works Dwelling 227sqm, Garage 48sqm.	Bearna	Granted subject to 17 no. conditions (20/08/2018)	Coastal Edge
17/1685	Ali Jalilvand	24/11/2017	for (a) Change of use of existing Ali's Fish Market retail unit (Unit 20) to retail and seafood bistro restaurant and deli (b) full change of use of adjoining retail unit (unit 19) to seafood bistro restaurant and deli (c) to make alterations to front and rear elevations (d) to include advertisement signage to the front, (3) ventilation ducting, gas storage and associated fittings, fitting of extraction and air handling units, all to the rear of the building (e) provision of a roof type cover to contain the extraction and air handling units to the rear of the building, (f) all associated services and works. Gross	An Leac Liath, Barna	Granted subject to 4 no. conditions (05/03/2018)	Village Centre (VC)

Planning Search						
			floor space of proposed works 142.5 Existing - part change of use only.			
17/1521	Brenda Murphy	20/10/2017	for (a) change of use of previous hairdresser unit no. 9 to extension of café at unit no. 8 (b) change of use and subdivision of unit no. 5 from retail/crèche to barber and hairdresser, (c) the associated changes to the relevant elevations, (d) all associated services and works at unit 5, 8 and 9, Barna Village Centre. Gross floor space of works to be retained 133.0sqm.	Barna Village	Granted subject to 4 no. conditions (13/12/2017)	Village Centre (VC)
17/731	Conor O'Carroll	24/05/2017	of the demolition of existing sub-standard house and for the construction of a replacement 1 and a half storey dwelling house, (242 sqm.) treatment plant, percolation area and for all associated site development works. (Gross floor space of works for demolition: 50 sqm. proposed 242sqm)	Furymelia West	Granted subject to 15 no. conditions (28/08/2017)	
17/726	Mike & Maggie Power	23/05/2017	of conservatory to side of dwelling, roof window to rear of dwelling, septic tank and percolation area and permission is sought to construct a new garage including all associated services. Gross floor space of proposed works: 43.75sqm, retention 16.84sqm	Bearna	Granted subject to 8 no. conditions (21/08/2017)	
17/580	John & Sheila Flynn	26/04/2017	to (1) increase the existing low roof pitch to accommodate 3 no. bedrooms and associated bathrooms. (2) To demolish existing single story garage attached to the side of the existing dwelling. (3) All associated site services. (Gross floor space of proposed works:144 sqm., gross floor space of demolition works:31 sqm.)	Forramoyle East	Granted subject to 5 no. conditions (11/09/2017)	
17/575	Bernadette Conneely	25/04/2017	for the construction of a dwelling house, garage, wastewater treatment system and all ancillary works. (Gross floor space of proposed works: House 274 sqm.)	Corboley	Granted subject to 15 no. conditions (18/09/2017)	

Planning Search						
16/1663	Rory Browne	08/12/2016	for retention of a front porch, rear sunroom and first floor south facing gable window. (Gross floor space of works to be retained: 23.33 sqm.)	Barna	Granted subject to 3 no. conditions (20/03/2017)	
16/1478	Carmel O'Connor	28/10/2016	or alterations to dwelling house and private wastewater treatment system with all associated site works and ancillary services on revised site boundaries from that permitted under planning reference number 14/588. (Gross floor space of proposed works: 114.2 sqm.)	Forramoyle East	Granted subject to 12 no. conditions (20/03/2017)	
16/1448	Spencer Lacey	24/10/2016	for the construction of a one and a half storey dwelling house (255sqm) and associated site services and works.	Truskey West	Granted subject to 9 no. conditions (31/07/2017)	Existing Residential
16/1327	K & H Davies	29/09/2016	to construct a single storey extension to the side and rear of existing 2 storey detached dwelling house. (Gross Floor space of proposed works: 17 sqm.)	Barna	Granted subject to 5 no. conditions (02/01/2017)	Existing Residential
16/1287	Shane Howard	19/09/2016	for an extension to the rear of the existing dwelling house along with all associated ancillary works. Gross floor space of works to be retained: 22.85sqm	Barna	Granted subject to 1 no. condition (19/12/2016)	Existing Residential
16/892	Eileen & Joe Hemon	04/07/2016	for (a) Retention of dwelling house, domestic shed and associated services on site with revised boundaries (b) Permission sought for proposed new extension with minor modifications to existing dwelling house. Gross floor space of proposed works: 99m ²	Barna	Granted subject to 7 no. conditions (19/12/2016)	
16/491	D & L Keane	20/04/2016	for (a) a rear extension with built-in roof space (b) a two storey front extension to an existing two storey dwelling including associated alterations and external site works and services at No. 1 Thornberry (gross floor space 73sqm)	Barna	Granted subject to 5 no. conditions (25/07/2016)	Existing Residential

Planning Search						
16/294	T Lydon	10/03/2016	to demolish fire damaged building and reinstate as a site with green palisade fencing and associated site works at buildings formerly known as Bearna Tyre Centre in Bearna Village on R336 Bearna-Galway Road (Gross floor space demolition 663sqm)	Barna	Granted subject to 3 no. conditions (13/06/2016)	Village Centre (VC)
15/1460	John & Sheila Flynn	01/12/2015	on grant of outline permission (pl. ref. 08/2127) for 2 dwellings houses and advanced sewage treatment systems and percolation areas (gross floor space 2 x 236sqm). (Previous planning ref: 11/926)	Forramoyle East	Granted (03/03/2016)	Residential phase 2
15/1367	Stephen & Suzette Kearns	05/11/2015	for change of house plans from previously approved planning permission reference 15/684, for the proposed construction of a two storey dwellinghouse, site entrance and associated site works (gross floor space 408sqm)	Barna	Granted subject to 16 no. conditions (15/02/2016)	Existing Residential
15/932	James Craven and Nora Madden	31/07/2015	1) The demolition of substandard dwelling and 2) full planning permission for the construction of a new dwelling, a new proprietary effluent treatment system and percolation area and all the associated site works (gross floor space 208.34sqm)	Boleybeg East	Granted subject to 14 no. conditions (02/11/2015)	
15/924	Jean Parkinson	29/07/2015	is sought for elevations of existing dwelling house, additional bedrooms, and permission is sought to enlarge roof window including all associated services (gross floor space 23.93 sqm)	Boleybeg East	Granted subject to 2 no. conditions (21/12/2015)	
15/830	Jean Boyd	09/07/2015	For the construction of a playroom and study, including all associated services. Gross floor space of proposed works: 21.61sqm	Barna	Granted subject to 5 no. conditions (27/08/2015) ABP granted 21/12/2015 (third party appeal)	Existing Residential

Planning Search						
15/608	Robert Condon	21/05/2015	chun teach nua, garaiste agus coras searachais a thogail, previous planning reference no. 09/1911 (gross floor space 275sqm)	Truskey West	Granted (13/07/2015)	Existing Residential
15/457	Keith Kissane	17/04/2015	for construction of a single storey extension to the side and rear of existing dwellinghouse and conversion of a stone outbuilding for habitable purposes and associated site works (Gross floor space 59sqm)	Barna	Granted subject to 8 no. conditions (20/07/2016)	Existing Residential
15/385	A. Elberse & T. Culhane	07/04/2015	for (a) a two storey front porch extension and alterations to roof at rear of dwelling (b) alterations to entrance drive, (c) front, rear and side elevational changes (d) reconstruction of rear terrace, connection to the public foul sewer and associated external works to an existing 2 1/2 storey detached dwelling (Gross floor space proposed 10sqm)	Lacklea	Granted subject to 6 no. conditions (06/07/2015)	Existing Residential and Coastal Edge
15/345	Alan Kearney	07/12/2015	Permission for development to consist of an ancillary off-licence use within the existing retail unit together with all associated site works	Silverstrand Service Station, Barna Road, Galway	Granted subject to 1 no. condition (01/03/2016)	
15/314	Mr Michael O'Grady	20/03/2015	to construct a single storey extension to the side and rear of existing dwelling house and associated site works at 1 Leac Lian, Barna, Co. Galway. (Gross floor space of proposed works 66m ²)	1 Leac Lian, Barna, Co. Galway	Granted subject to 3 no. conditions (22/06/2015)	Existing Residential
15/320	L Clifford	20/03/2015	for a dormer dwellinghouse with effluent treatment plant, percolation area, domestic garage and all associated site works including new entrance and boundary walls (gross floor space 258sqm & garage 27sqm)	Loughinch	Granted subject to 16 no. conditions (10/08/2015)	
15/273	Mr & Mrs McNerney	12/03/2015	to construct a single storey extension to part of the front of elevation of the existing dwelling (gross floor space 18.24sqm)	Forramoyle East	Granted subject to 4 no. conditions (24/08/2015)	

Table 7.3 below lists all applications for development that are within the immediate vicinity of the subject lands and were considered as part of this assessment.

Table 7-3 Planning History within the vicinity of the Application Site.

Planning Reference Number	Area SQM	Development Description	Decision
03/4315	C & T Development Ltd.	Application for the demolition of existing dwelling, construction of 22 no. 2 storey dwellings with treatment plant and associated site works	Granted
04/3846	C & T Developments Ltd	Application for replacing two storey semi- detached dwellings with 5 no. detached two storey dwellings, revised boundaries/driveways to sites 9 to 16 and associated external works (gross floor space 5320sqm)	Granted
04/4249	C & T Developments Ltd	Application for construction of 15 no. two storey dwellings and associated external works at previously granted residential development (03/4315)	Refused
06/903	C & T Developments	Application to relocate a wastewater treatment system (originally granted under planning permission no's 03/4315 and 04/3846)	Granted
09/1278	Liam O'Toole	Application for the demolition of 3 No. sheds/outbuildings, the construction of 94 No. dwellings comprising of; 54 No. two storey semi-detached units, 20 No. two storey terrace units comprising of 5 No. terrace blocks, 16 No. two storey detached units, 4 No. bungalow units, 3 No. two and a half storey buildings comprising of 5 No. commercial/retail units, 10 No. apartments and a creche, the provision of parking and ancillary delivery areas, the construction of 3 No. link bridges, 4 No. ancillary storage area	Granted by Galway County Council but refused by An Bord Pleanála (under reference no Pl. 07. 236240),

In addition to the above the following developments are also planned within the immediate and wider area and have been taken into account in this cumulative assessment:

- The proposed N6 Galway City Ring Road Corridor is located north of the application site. The Natura Impact Statement and habitat mapping undertaken for the proposed N6 Galway City Ring Road was also consulted. The NIS concluded that *‘following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts from the proposed road development and with the implementation of the mitigation measures proposed, that the proposed road, development does not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European Site, either alone or in combination with other plans or projects, and there is no reasonable scientific doubt in relation to this conclusion’*. In addition, the Biodiversity chapter of the EIAR for that project concluded that there would be no likely significant residual effects on any of the Key Ecological Receptors that could result in significant effects when considered in combination with the currently proposed development.
- Bearna Village SHD is in a prospective SHD scheme in pre-planning stage.
- Permission for development on site accessed from the main street (R336). The proposed development will consist of the following: (1) modifications and improvements to 2 no. existing 2 storey street front houses, new public footpath and access to the houses, on-street car-parking spaces and boundary treatments. Construction of 1 no. new infill 1 bedroomed terraced house between the existing street front houses (2) demolition of existing partially-built garage structure on the site (3) construction of 15 no. new houses provided as follows: 4 no. in a terrace and 2 no. semi-detached Type A houses; 2 storey, 3 bedroomed houses with optional future attic conversion; 5 no. in a terrace Type B houses; 2.5 storey 3-bedroomed houses; 4 no. in a terrace Type C houses; 2.5 storey 3-bedroomed houses arranged around a shared landscaped home zone/village green amenity space (4) connection of all houses to existing drainage and watermain services, provision of new access road and associated carparking spaces (gross floor space proposed 2216sqm; retention 224sqm;demolition 68sqm) [Planning ref.: 16147]
- Permission for the provision of a total of 48 no. dwellings as follows: -30 no. 2 storey detached units, 14 no. 2 storey semi-detached units and 4 no. 2 storey terraced units together with all associated landscaping and site works and connection to existing services. Gross floor space 7044sqm [Planning ref.: 171314] and minor amendments under [Planning Ref: 18/1527]

7.2.1 Conclusion of Cumulative Assessment

Following the detailed assessment provided in the preceding sections, it is concluded that, the proposed development will not result in any adverse effects on the integrity of any European site. There is, therefore, no potential for the proposed development to contribute to any potential cumulative adverse effects on any European site when considered in-combination with other plans and projects.

In the review of the projects and plans that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the proposed development.

Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, there are no residual cumulative impacts with regard to any European Site.

8. **CONCLUDING STATEMENT**

This NIS has provided an assessment of all potential direct or indirect adverse effects which have the potential to cause likely significant impacts on European sites.

Where the potential for any likely significant effects on any European Site has been identified then, as is apposite when conducting a Stage Two Appropriate Assessment, consideration has been given to the mitigation measures which have been identified and which will be implemented in order to avoid potential water pollution events, in particular. The measures ensure that the construction and operation phases of the proposed development will not adversely affect the integrity of any European sites. In conclusion, in circumstances where the mitigation measures identified in this NIS are implemented, there is no reasonable scientific doubt remaining as to the absence of adverse effects on the constitutive characteristics of the Galway Bay Complex cSAC and Inner Galway Bay SPA.

Therefore, it can be objectively concluded that the proposed development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.

BIBLIOGRAPHY

Bailey, M. and Rochford J. (2006) Otter Survey of Ireland 2004/2005. Irish Wildlife Manuals, No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. and Fuller, R.J. (2013). Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland. BTO Books, Thetford, UK.

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

Blumstein DT, Fernández-Juricic E, Zollner PA, Garity SC. 2005. Inter-specific variation in avian responses to human disturbance. *Journal of Applied Ecology* 42:943–953. Blumstein DT 2006b. The multi-predator hypothesis and the evolutionary persistence of antipredator behavior. *Ethology* 112: 209–217.

Bowers Marriott, B. (1997) Practical Guide to Environmental Impact Assessment: A Practical Guide. Published by McGraw-Hill Professional, 1997, 320 pp.

Chandler, J.R. (1970) A Biological Approach to water Quality Management. *Water Poll. Cont.* 69:415–421.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

Crowe, O., Wilson, J., Aznar, I. and More, S.J. (2009). A review of Ireland's waterbirds, with emphasis on wintering migrants and reference to H5N1 avian influenza. *Irish Veterinary Journal* 62, 800–811.

Crowe, O. (2005) Ireland's Wetlands and their Waterbirds: Status and Distribution. BirdWatch Ireland, Rockingham, Co. Wicklow.

Del Hoyo, J., Elliott, A., and Sargatal, J. 1996. Handbook of the Birds of the World, vol. 3: Hoatzin to Auks. Lynx Edicions, Barcelona, Spain

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin.

DEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

Dobson, M., Pawley, S., Fletcher, M. and Powell, A., 2012. Guide to Freshwater Invertebrates, *Freshwater Biological Association*, The Ferry Landing, Cumbria, UK.

EC (2018) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.

EC (2007a) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2007b) Interpretation Manual of European Union Habitats. Version EUR 27. European Commission, DG Environment.

EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements. Environmental Protection Agency.

EPA (2003) Advice Notes on current practice in the preparation of Environmental Impact Statements. Environmental Protection Agency.

EPA website: <http://www.epa.ie>.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – <http://www.irishstatutebook.ie>.

European Communities (Environmental Impact Assessment) Regulations, 1989 to 2001.

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – <http://www.irishstatutebook.ie>.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.

Galway City Council (2016) Galway Transport Strategy

Galway County Council, Galway County Development Plan 2015 -2021 and all associated Environmental Documentation.

Galway County Council, Variation 2(a) to the Galway County Development Plan 2015 -2021 and all associated Environmental Documentation.

Gittings, T., Peppiatt, C. and Troake, P., 2015. Disturbance response of Great Northern Divers *Gavia immer* to boat traffic in Inner Galway Bay. *Irish Birds*, 10(2), pp.163-166.

Glover HK, Weston MA, Maguire GS, Miller KK, Christie BA. 2011. Towards ecologically meaningful and socially acceptable buffers: Response distances of shorebirds in Victoria, Australia, to human disturbance. *Landscape and Urban Planning* 103:326–334.

Guay PJ, McLeod EM, Taysom AJ, Weston MA. 2014. Are vehicles 'mobile bird hides'? A test of the hypothesis that 'cars cause less disturbance' *The Victorian Naturalist* 131:150–155.

Habitats Directive (92/43/EEC).

Holloway, Steve. "Winter distribution and disturbance of wildfowl and waders on Findhorn Bay." BTO Research Report (1997).

Jiang, Y. and Møller, A.P., 2017. Antipredator escape distances of common and threatened birds. *Behavioral Ecology*, 28(6), pp.1498-1503.

McCorry, M. and Ryle, T. (2009). Coastal Monitoring Project 2004 – 2006. Unpublished Report to NPWS.

Murphy, D.F. (2004) Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites. Eastern Regional Fisheries Board, Dublin.

NPWS (2008) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2008) The Report on Status of Habitats and Species in Ireland: Technical

NPWS (2013) Conservation objectives for Inner Galway Bay SPA [004031]. Version 1.0. Department of Culture, Heritage and the Gaeltacht, available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004031.pdf, Accessed: 15/05/2020.

NPWS (2013) Conservation Objectives: Galway Bay Complex SAC [000268]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000268.pdf, Accessed: 15/05/2020.

NPWS Protected Areas Site Synopses and maps available on <http://www.npws.ie/en/ProtectedSites/>.

NRA (2004) Environmental Impact Assessment of National Road Schemes – A Practical Guide, National Roads Authority, Dublin.

NRA (2004) Guidelines for the Treatment of Noise and Vibration in National Road Schemes (1 ed.). Dublin: National Roads Authority.

NRA (2005) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) A Guide to Landscape Treatments for National Road Schemes in Ireland. Dublin: National Roads Authority.

NRA (2006) Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post-Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2009). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority.

Oliver, G. (2007). Inventory of Irish coastal lagoons (version 2). Unpublished Report to NPWS.

O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. (2013) The Irish semi-natural grasslands survey 2007-2012. Irish Wildlife Manuals, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

Pease, M. L., Rose, R. K. & Butler, M. J. Effects of human disturbances on the behavior of wintering ducks. *Wildlife Society Bulletin* 33, 103-112 (2005).

- Richards, A. 1990. Seabirds of the northern hemisphere. Dragon's World Ltd, Limpsfield, U.K.
- Smit CJ, Visser GJM. 1993. Effects of disturbance on shorebirds: a summary of existing knowledge from the Dutch Wadden Sea and Delta area. Wader Study Group Bulletin 68:6–19.
- Therivel R. (2009) Workshop Material on the Habitats Directive Assessment of Plans Levett-Therivel Sustainability Consultants on behalf of the Heritage Council, Kilkenny.
- Toner, J. Bowman, K. Clabby, J. Lucey, M. McGarrigle, C. Concannon, C. Clenaghan, P. Cunningham, J. Delaney, S. O'Boyle, M. MacCárthaigh, M. Craig, R. Quinn (2005). Water Quality in Ireland 2001-2003. Environmental Protection Agency.
- Water status data available on <http://www.epa.ie> and <http://www.wfdireland.ie>
- Wildlife Act 1976 and Wildlife (Amendment) Act 2000.



APPENDIX 1

LANDSCAPE PLAN



PLEASE NOTE:

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THIS DRAWING IS NOT TO BE RELIED UPON FOR CONSTRUCTION AND NO GUARANTEE IS GIVEN AS TO ITS SUITABILITY FOR CONSTRUCTION.

ALL CONTRACTORS, WHETHER MAIN OR SUBCONTRACTORS MUST VISIT THE SITE AND ARE RESPONSIBLE FOR TAKING AND CHECKING ANY AND ALL DIMENSIONS AND LEVELS THAT RELATE TO THE WORKS. ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR.

GENERAL NOTES:

- All soil movement should take place during dry weather (when topsoil is not wet);
- Topsoil should be stripped first & stored separately from subsoil. All topsoil to be good quality medium loam and free from deleterious material;
- Organic matter to be added when necessary to create a good friable structure;
- Soil depths: for trees 1000mm (40% free draining subsoil, 60% topsoil); for general planting 700mm;
- All grass levels to be raised 100mm above kerb level;
- All landscape treatment subject to engineers' approval for structural, moisture and drainage considerations;
- Gravel or hard surface line between all planting and buildings, approx width 300mm;
- 1m high black shelter fencing should be erected for the first two seasons in wind vulnerable areas;
- Bark mulch dress to 50mm depth should be added to all ornamental planting and replenished annually to maintain depth.

HATCH NOTE:

The drawing hatch is graphic indication & not intended as an accurate representation of finished work. Paving and other hard/soft finishes will vary on completion. Please discuss further with Radharc regarding material finishes.

TREES & SHRUBS (PLANTING, CARE & MAINTENANCE):

- Trees to be supported by staking depending on size: 1.4-1.5m trees planted in prepared tree pits, 900 x 900 x 1000mm. Secured with double stake and cross bar; 16-18 cm girth - Secured with double stake and cross bar;
- Containerised shrubs to be planted at any time of the year but avoiding periods of frost, water logging or drought;
- Bareroot trees to be planted in the period of Nov-March;
- Shelter Fencing to be erected during establishment phase.

MAINTENANCE:

- Weed control by residual chemical and by regular spot treatment with translocated herbicide (e.g. Glyphosate) during the growing season. Weeds among plants to be hand weeded where necessary;
- Pruning of all plants to be carried out by a competent horticulturist in accordance with good practice;
- Watering: all planting to be kept well watered during dry weather, especially during establishment phase.

Radharc

landscape design

Private Commercial Residential

Ballinacolla, Moycullen, Co. Galway, H91 KA3
Tel: (091) 555078 Fax: (091) 555956
e-mail: info@radharclandscaping.com
www.radharclandscaping.com

Stage 3 - SHD
Rev_Date_By_Description

Drawing Purpose: FOR_PLANNING

Project: Bearna SHD, Bearna, Co Galway

Client: Burkeway Homes

Drawing title: Landscape Masterplan

Drawing No: 924_Rad_1973_01_Landscape Masterplan

Scale: 1:500@A1 **Drawn by:** SG

Date: 13/07/2020 **Checked by:** BW

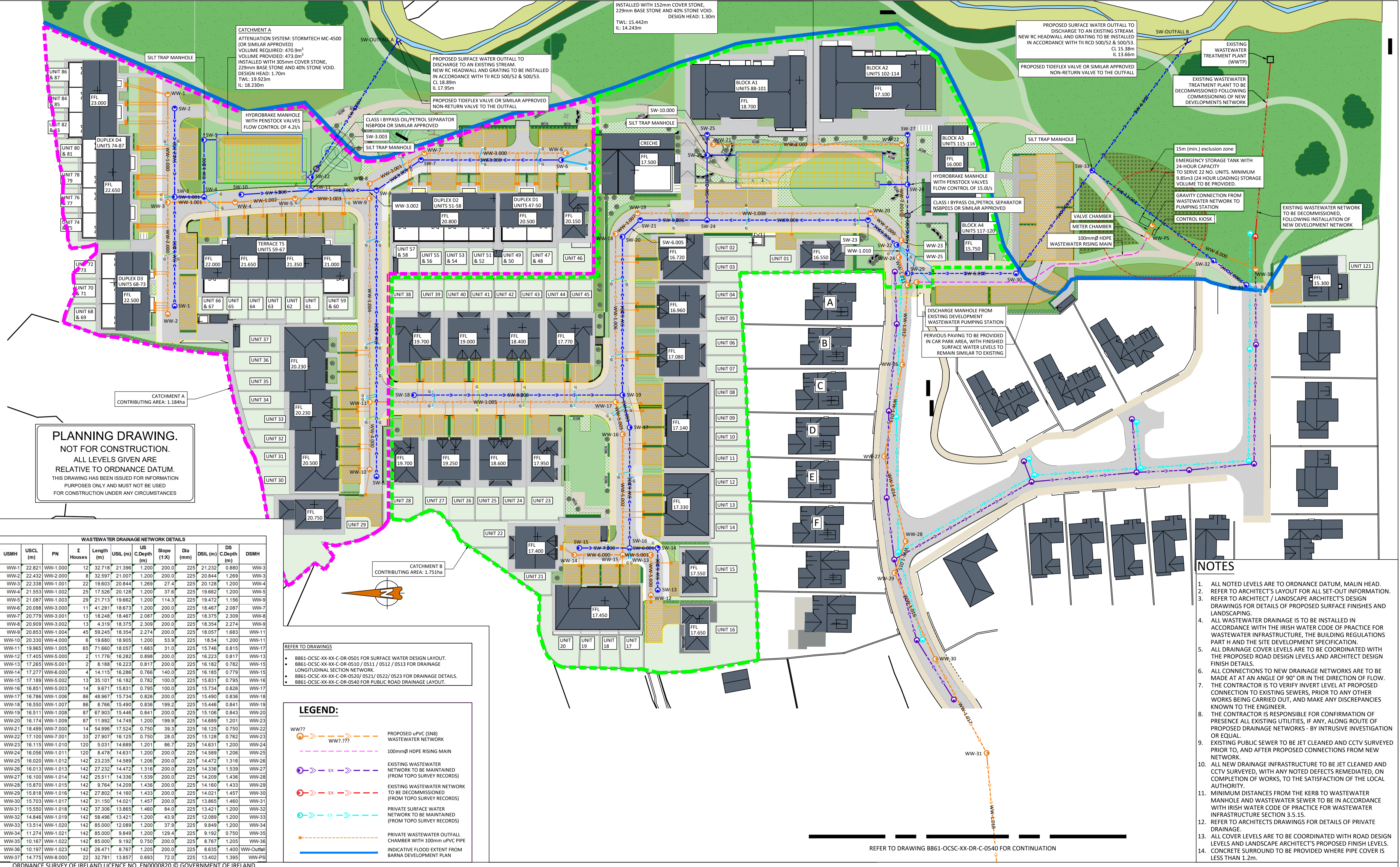
Do not scale from this drawing. All dimensions to be checked on site. Discrepancies between this drawing and information given elsewhere must be reported to this office for clarification before proceeding



APPENDIX 2

DRAINAGE LAYOUT DRAWING

PLANNING DRAWING.
NOT FOR CONSTRUCTION.
ALL LEVELS GIVEN ARE
RELATIVE TO ORDANCE DATUM.
THIS DRAWING HAS BEEN ISSUED FOR INFORMATION
PURPOSES ONLY AND MUST NOT BE USED
FOR CONSTRUCTION UNDER ANY CIRCUMSTANCES



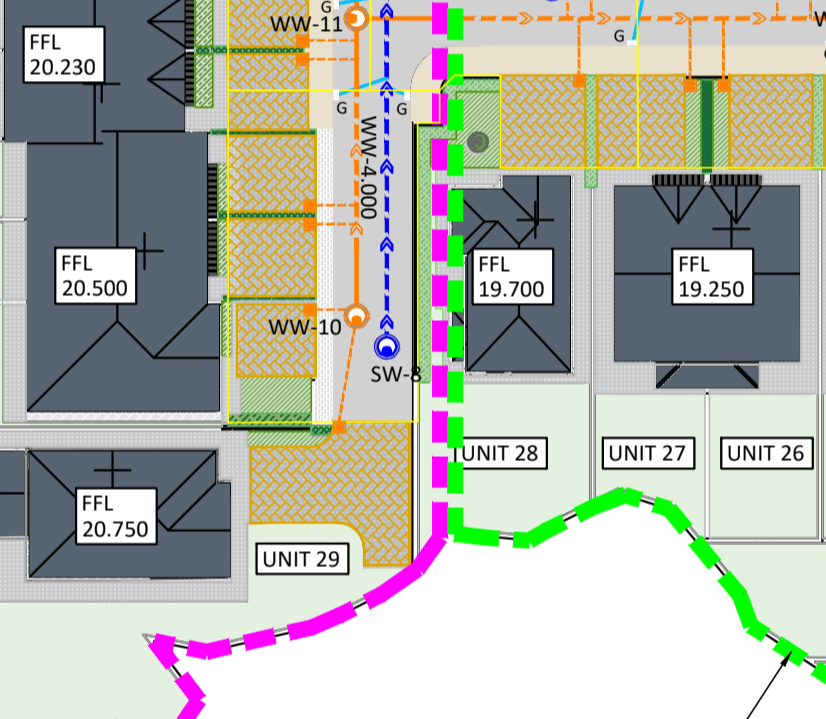
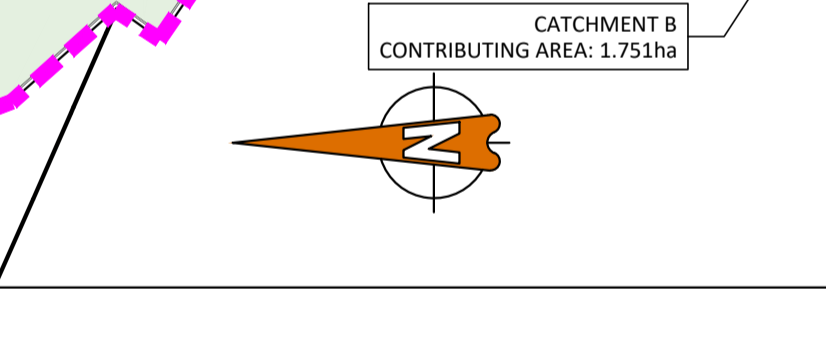
WASTEWATER DRAINAGE NETWORK DETAILS

USMH	USCL (m)	PN	Houses	Length (m)	USIL (m)	US C-Depth (m)	Slope (1:X)	Dia (mm)	DSIL (m)	DS C-Depth (m)	DSMH
WW-1	22.821	WW-1.000	12	32.718	21.396	1.200	200.0	225	21.232	0.880	WW-3
WW-2	22.432	WW-2.000	8	32.597	21.007	1.200	200.0	225	20.844	1.269	WW-3
WW-3	22.338	WW-1.001	22	19.603	20.844	1.269	27.4	225	20.128	1.200	WW-4
WW-4	21.553	WW-1.002	25	17.526	20.128	1.200	37.6	225	19.662	1.200	WW-5
WW-5	21.087	WW-1.003	29	21.713	19.662	1.200	114.3	225	19.472	1.156	WW-9
WW-6	20.098	WW-3.000	11	41.291	18.673	1.200	200.0	225	18.467	2.087	WW-7
WW-7	20.779	WW-3.001	13	18.248	18.467	2.087	200.0	225	18.375	2.309	WW-8
WW-8	20.909	WW-3.002	13	4.319	18.375	2.309	200.0	225	18.354	2.274	WW-9
WW-9	20.853	WW-1.004	45	59.245	18.354	2.274	200.0	225	18.057	1.683	WW-11
WW-10	20.330	WW-4.000	6	19.680	18.905	1.200	53.9	225	18.54	1.200	WW-11
WW-11	19.965	WW-1.005	65	71.680	18.057	1.683	31.0	225	15.746	0.815	WW-17
WW-12	17.405	WW-5.000	2	11.776	16.282	0.898	200.0	225	16.223	0.817	WW-13
WW-13	17.265	WW-5.001	2	8.188	16.223	0.817	200.0	225	16.182	0.782	WW-15
WW-14	17.277	WW-6.000	4	14.115	16.286	0.766	140.0	225	16.185	0.779	WW-15
WW-15	17.189	WW-5.002	13	35.101	16.182	0.782	100.0	225	15.831	0.795	WW-16
WW-16	16.851	WW-5.003	14	9.671	15.831	0.795	100.0	225	15.734	0.826	WW-17
WW-17	16.786	WW-1.006	86	48.967	15.734	0.826	200.0	225	15.490	0.836	WW-18
WW-18	16.550	WW-1.007	86	8.766	15.490	0.836	199.2	225	15.446	0.841	WW-19
WW-19	16.511	WW-1.008	87	67.903	15.446	0.841	200.0	225	15.106	0.843	WW-20
WW-20	16.174	WW-1.009	87	11.992	14.749	1.200	199.9	225	14.689	1.201	WW-23
WW-21	18.499	WW-7.000	14	54.996	17.524	0.750	39.3	225	16.125	0.750	WW-22
WW-22	17.100	WW-7.001	33	27.907	16.125	0.750	28.0	225	15.128	0.762	WW-23
WW-23	16.115	WW-1.010	120	5.031	14.689	1.201	86.7	225	14.631	1.200	WW-24
WW-24	16.056	WW-1.011	120	8.478	14.631	1.200	200.0	225	14.589	1.206	WW-25
WW-25	16.020	WW-1.012	142	23.235	14.589	1.206	200.0	225	14.472	1.316	WW-26
WW-26	16.013	WW-1.013	142	27.232	14.472	1.316	200.0	225	14.336	1.539	WW-27
WW-27	16.100	WW-1.014	142	25.511	14.336	1.539	200.0	225	14.209	1.436	WW-28
WW-28	15.870	WW-1.015	142	9.764	14.209	1.436	200.0	225	14.180	1.433	WW-29
WW-29	15.818	WW-1.016	142	27.802	14.180	1.433	200.0	225	14.021	1.457	WW-30
WW-30	15.703	WW-1.017	142	31.150	14.021	1.457	200.0	225	13.865	1.460	WW-31
WW-31	15.550	WW-1.018	142	37.308	13.865	1.460	84.0	225	13.421	1.200	WW-32
WW-32	14.846	WW-1.019	142	58.498	13.421	1.200	43.9	225	12.989	1.200	WW-33
WW-33	13.514	WW-1.020	142	85.000	12.989	1.200	37.9	225	9.949	1.200	WW-34
WW-34	11.274	WW-1.021	142	85.000	9.949	1.200	129.4	225	9.192	0.750	WW-35
WW-35	10.167	WW-1.022	142	85.000	9.192	0.750	200.0	225	8.767	1.205	WW-36
WW-36	10.197	WW-1.023	142	26.471	8.767	1.205	200.0	225	8.635	1.400	WW-PS
WW-PS	14.775	WW-8.000	22	32.781	13.857	0.693	72.0	225	13.402	1.395	WW-PS

LEGEND:

- WW-?? PROPOSED uPVC (SN8) WASTEWATER NETWORK
- 100mm Ø HDPE RISING MAIN
- EXISTING WASTEWATER NETWORK TO BE MAINTAINED (FROM TOPO SURVEY RECORDS)
- EXISTING WASTEWATER NETWORK TO BE DECOMMISSIONED (FROM TOPO SURVEY RECORDS)
- PRIVATE SURFACE WATER NETWORK TO BE MAINTAINED (FROM TOPO SURVEY RECORDS)
- PRIVATE WASTEWATER OUTFALL CHAMBER WITH 100mm uPVC PIPE
- INDICATIVE FLOOD EXTENT FROM BARNA DEVELOPMENT PLAN

- REFER TO DRAWINGS**
- B861-OCSC-XX-XX-C-DR-0501 FOR SURFACE WATER DESIGN LAYOUT.
 - B861-OCSC-XX-XX-C-DR-0510 / 0511 / 0512 / 0513 FOR DRAINAGE LONGITUDINAL SECTION NETWORK.
 - B861-OCSC-XX-XX-C-DR-0521 / 0522 / 0523 FOR DRAINAGE DETAILS.
 - B861-OCSC-XX-XX-C-DR-0540 FOR PUBLIC ROAD DRAINAGE LAYOUT.



Rev No.	Date	Revision Note	Drn by	Chkd by
P01	12.05.20	ISSUED FOR PLANNING	AB	MK
P02	15.05.20	REVISED WASTEWATER NETWORK	AB	MK
P03	27.05.20	REVISED WASTEWATER NETWORK	AB	MK
C01	09.06.20	ISSUED FOR PLANNING	AB	MK
C02	08.07.20	SUITABLE FOR PLANNING	AB	MK
C03	10.07.20	REVISED PUMPING STATION	AB	MK
C04	25.09.20	ISSUED FOR PLANNING	AB	MK

REFER TO DRAWING B861-OCSC-XX-DR-C-0540 FOR CONTINUATION

FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS.
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Dublin | London | Belfast | Galway | Cork

Client: **BURKEWAY HOMES LTD**
Project: **RESIDENTIAL DEVELOPMENT AT BEARNA**
Title: **WASTEWATER NETWORK LAYOUT**

Code | Originator | Zone | Level | Role | Type | Number | Status | Revision
B861-OCSC-XX-XX-DR-C-0502 A1 C04

Date: 12.05.20 Scale: 1:500 @ A1 Drn by: AB Chkd by: MK Aprvd by: AH



APPENDIX 3

LETTER FROM IRISH WATER

Fred Fullard
Burkeway Homes
c/o David Goaley
O Connor Sutton Cronin

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

21 November 2019

Dear Fred Fullard,

**Re: Connection Reference No CDS19008110 pre-connection enquiry -
Subject to contract | Contract denied**

**Connection of a proposed development comprising of 120 No. Housing Units and an existing
development of 21 housing units at Truskey East, Barna**

Irish Water has reviewed your pre-connection enquiry in relation to water and wastewater connections for a proposed development of 120 No. Housing Units and a wastewater connection for an existing 21 No. housing unit development at Truskey East, Barna, Co. Galway.

Based upon the details that you have provided with your pre-connection enquiry and on the capacity currently available in the network(s), as assessed by Irish Water, we wish to advise you that, subject to a valid connection agreement being put in place, your proposed connection to the Irish Water network(s) can be facilitated.

A wastewater connection can be facilitated for the total 141 No. housing units (proposed and existing) to the existing 300mm Irish Water Foul Sewer at a point approximately 340m to the south of the entrance to the existing housing estate.

Please be aware that Irish Water is now responsible for the delivery of the connection related works in the public and third party domains including wastewater and watermain network extensions and connections. The costs and conditions associated with the connection would be detailed in a connection offer at connection application stage. The customer would be responsible for the costs associated with the provision of a network extension and connection to their development site. Further information on connection charges is available at <https://www.water.ie/connections/information/connection-charges/>.

A watermain connection to the existing Irish Water watermain network (which exists along the road fronting the existing housing estate) can be facilitated. The feasibility analysis undertaken by Irish Water as part of the pre-connection enquiry process relates only to the capacity of the Irish Water owned infrastructure to cater for the demand of the proposed development. The confirmation of feasibility does not extend to your fire flow requirements. To guarantee a flow to meet the Fire Authority requirements you should provide adequate fire storage capacity within your development. The watermain network serving the existing Cnoc Fraoigh Housing estate is privately owned, it ultimately connects to the Irish Water watermain network which runs along the public road. Should you intend to connect via this private network you will require permission from the third party owners and it will be your responsibility to confirm that the private watermain infrastructure has capacity, is structurally adequate and provides an adequate service for your demands and that of the existing housing estate development.

Strategic Housing Development

Irish Water notes that the scale of this development may dictate that it is subject to the Strategic Housing Development planning process. Therefore in advance of submitting your full application to An Bord Pleanála for assessment, you must have reviewed this development with Irish Water and received a Statement of Design Acceptance in relation to the layout of water and wastewater services. A design proposal for the water and/or wastewater infrastructure can be submitted to cdsdesignqa@water.ie for assessment. All infrastructure should be designed and installed in accordance with the Irish Water Codes of Practice and Standard Details.

The development will be subject to Irish Water's Quality Assurance Requirements for Design and Field Inspections. The overall Quality Assurance requirements will be incorporated into a Connection Agreement at connection application stage as part of a Connection Offer from Irish Water. Please note there is a requirement for wayleaves to be provided along the routes of watermain and wastewater pipes in favour of Irish Water as part of the Connection Agreement. This is to facilitate the vesting of the watermain and wastewater infrastructure. This wayleave requirement extends to the arterial route of connection to the Irish Water network should a connection be proposed via third party/private infrastructure. Further guidance in relation to IW design requirements is available at <https://www.water.ie/connections/developer-services/QA-Design-Req-Manual.pdf>.

You are advised that this correspondence does not constitute an offer in whole or in part to provide a connection to any Irish Water infrastructure and is provided subject to a connection agreement being signed at a later date.

A connection agreement can be applied for by completing the connection application form available at www.water.ie/connections. Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities.

If you have any further questions, please contact James O Malley from the design team at jomalley@water.ie. For further information, visit www.water.ie/connections.

Yours sincerely,



Maria O'Dwyer

Connections and Developer Services



APPENDIX 4

***SUBMISSION FROM
DEVELOPMENT APPLICATIONS
UNIT ON PREVIOUS
DEVELOPMENT ON THE SITE***



Our Ref: SHD Bearna
An Bord Pleanála Reference: ABP-302216-18

03 September 2018

The Strategic Housing Unit,
An Bord Pleanála
64 Marlborough Street,
Dublin 1
D01 V902

Via email: strategichousing@pleanala.ie

Re: Notification to the Minister for Culture, Heritage and the Gaeltacht under the Planning and Development (Housing) and Residential Tenancies Act 2016; Planning and Development (Strategic Housing Development) Regulations 2017

Re: Proposed Strategic Housing Development in respect of the demolition of existing outbuildings and the construction of 197 No. new dwellings in addition to a multi- purpose community room, vehicular and pedestrian link bridges, parking, bicycle and bin storage areas, public realm landscaping as well as all associated site development works and services

A chara

On behalf of the Department of Culture, Heritage and the Gaeltacht, I refer to correspondence received in relation to the above.

Outlined below are heritage-related observations/recommendations of the Department under the stated heading.

Nature Conservation

The Department refers to the above Strategic Housing Development application and associated reports at Trusky East, Bearna, Co. Galway.

The following observations are made by the Department in its advisory role as a prescribed body under planning legislation. They are not exhaustive but are intended to assist An Bord Pleanála in meeting the obligations that arise in relation to nature conservation in the context of the current planning application.

The proposed development is approximately 950m west of the European site, Galway Bay Complex SAC (site code 00268) and Inner Galway Bay SPA (site code 004031). It is recommended that the Board would consider if the the proposed development would have indirect or cumulative effects on these European sites, including as a result of increased amenity and recreational pressures near the margins of Galway City; the growing infrastructural needs, including roads and cycleways; and the



wastewater from the site which will be treated in and discharge to Galway Bay and to the SAC and SPA.

The application area (approximately 7.2ha) comprises a network of small fields of grassland, with encroachment by bracken and scrub, and a small area of dry heath. The Trusky Stream, a minor watercourse, passes through the site and a total of seven new bridges are proposed; three for vehicular access and four pedestrian bridges. Almost all areas of natural/semi-natural habitat will be lost or modified as a result of the proposed development. The likely effects of bridge or culvert construction on the watercourse, taking design into account, are not assessed in Ecological Impact Assessment and it is unclear whether areas of 'riparian habitat' can be retained in the final development.

A bat survey was undertaken on 31/05/18, and established that Soprano and Common Pipistrelle Bats utilise the site. While it appears that there are no bat roosts on the site, all bats are strictly protected (Annex IV of the Habitats Directive) by the European Communities (Birds and Natural Habitats) Regulations, 2011. The Board should consider any potential adverse effects of the proposed development on bats, nesting birds, and any other protected species.

You are requested to send further communications to this Department's Development Applications Unit (DAU) via **eReferral**, where used, or to manager.dau@chg.gov.ie; if emailing is not possible, correspondence may alternatively be sent to:

The Manager
Development Applications Unit (DAU)
Department of Culture, Heritage and the Gaeltacht
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

A handwritten signature in blue ink, appearing to read 'Diarmuid Buttimer', is located below the text 'Is mise, le meas'.

Diarmuid Buttimer
Development Applications Unit



APPENDIX 5

**CONSTRUCTION
ENVIRONMENTAL
MANAGEMENT PLAN**

Construction and Environmental Management Plan

Burkeway Bearna Strategic
Housing Development



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1. INTRODUCTION

This Construction and Environmental Management Plan (CEMP) has been developed by McCarthy Keville O’ Sullivan Ltd. (MKO) on behalf of Burkeway Homes Limited, in respect of a proposed Strategic Housing Development [SHD] located in the townlands of Trusky East, Trusky West, Freepport and Ahaglugger, approximately 6km to the west of Galway City. The CEMP has been prepared in conjunction with the Environmental Impact Assessment Report (EIAR). The CEMP will be finalised subsequent to any permission granted by An Bord Pleanála and will be updated prior to construction to include, inter alia, any additional requirements pursuant to relevant planning conditions imposed and in order to identify, assess and satisfy the contract performance criteria. The developer will ensure that the content of the finalised CEMP will be implemented by the appointed contractor.

This report provides the environmental management framework to be adhered to during the pre-commencement, construction and operational phases of the proposed development and it incorporates the mitigating principles to ensure that the proposed works are carried out in a way that minimises the potential for any environmental impacts to occur. This document outlines also the procedures for the management of waste which will be generated during each phase of the project in accordance with the European waste hierarchy and relevant waste legislation.

This CEMP identifies the key planning and environmental considerations that must be adhered to and delivered during site construction. This report is intended as a single, amalgamated document that can be used during the future phases of the project, as a single consolidated point of reference relating to all construction, environmental and drainage requirements.

1.1 Scope of Construction and Environmental Management Plan

This report is presented as a document for the management of construction and demolition activities and waste materials generated during the works and following completion. It outlines clearly the mitigation measures that are required to be adhered to in order to manage activities and waste materials in an appropriate manner. The report is divided into six sections, as outlined below.

Section 1 provides a brief introduction as to the scope of the report.

Section 2 outlines the site and project details and an overview of the proposed works along with detailing the targets and objectives of this plan.

Section 3 sets out details of the environmental management plan for the site as well as the environmental controls on site in particular noise and dust controls and the protection of water quality. A construction and demolition waste management plan is also provided.

Section 4 sets out a fully detailed implementation plan for the environmental management of the proposed project outlining the roles and responsibilities of the project team as well as an emergency response procedure in terms of site health and safety and environmental protection.

Section 5 & 6 consists of a summary table of all mitigation and monitoring proposals to be adhered to during the implementation of the proposed project, categorised into two separate headings, 1) pre-commencement measures; 2) construction-phase measures.

Section 7 provides details of the compliance review process to ensure all commitments set out in this document are being adhered to by means of audit and inspection.

2. SITE AND PROJECT DETAILS

2.1 Site Location

The site area comprises approximately 6.19ha of land located within the townlands of Trusky East, Trusky West, Freeport and Ahaglugger, approximately 6km to the west of Galway City [I.G. Ref.: M 23388 23615]. The site is bounded by improved agricultural grassland to the north and east and residential housing to the west and south. The site is accessed via an existing residential development at Trusky East called Cnoc Fraoigh, off the Bearna Road. A site location map is presented in Figure 2-1 with the site location highlighted in red. A site layout map is presented in Figure 2-2.

2.2 Description of the Proposed Development

Planning permission is sought by Burkeway Homes Limited for a 5-year permission for development on a site which extends to 5.38ha in the townlands of Trusky East, Trusky West, Freeport and Ahaglugger, Bearna, County Galway.

The proposed development will consist of the following:

- Demolition of existing outbuildings
- Construction of 121 no. residential units comprising
 - 52 no. houses (37 no. three-beds, 15 no. four-beds)
 - 4 no. duplex units in Duplex Block D1 (2 no. two-beds (ground floor units) and 2 no. 3 beds (2 storey units))
 - 8 no. duplex units in Duplex Block D2 (4 no. two-beds (ground floor units) and 4 no. 3 beds (2 storey units))
 - 6 no. duplex units in Duplex Block D3 (3 no. two-beds (ground floor units) and 3 no. 3 beds (2 storey units))
 - 14 no. duplex units in Duplex Block D4 (7 no. two-beds (ground floor units) and 7 no. 3 beds (2 storey units))
 - 4 no. duplex units in Terrace Block T5 (2 no. two-beds (ground floor units) and 2 no. 3 beds (2 storey units))
 - 14 no. Apartments in Apartment Block A1 (5 no. one-beds, 9 no. two-beds)
 - 13 no. Apartments in Apartment Block A2 (4 no. one-beds, 9 no. two-beds and a Multipurpose Room)
 - 2 no. Apartments in Apartment Block A3 (2 no. two-beds)
 - 4 no. Apartments in Apartment Block A4 (4 no. two-beds)
- Development of a crèche facility (224.80 sqm) associated outdoor play areas and parking
- Provision of a footpath connectivity link along the L1321
- Provision of shared communal and private open space, car and bicycle parking, site landscaping and public lighting, services, access from the L-1321 via the Cnoc Fraoigh development and all associated site development works
- Provision of a public linear park along the Trusky Stream

2.3 Targets and Objectives

The key site targets are as follows;

- Ensure construction works and activities are completed in accordance with mitigation and best practice approach as presented in the EIAR, Natura Impact Statement (NIS) and associated planning documentation;

- Ensure construction works and activities are completed in accordance with all planning conditions for the development;
- Ensure construction works and activities have minimal impact/disturbance to local landowners and the local community;
- Ensure construction works and activities have minimal impact on the natural environment; Adopt a sustainable approach to construction; and,
- Provide adequate environmental training and awareness for all project personnel.

The key site objectives are as follows;

- Using recycled materials if possible, e.g. excavated soil, stone and clean inert material;
- Ensure sustainable sources for materials supply where possible;
- Avoidance of any pollution incident as a result of working around or close to existing watercourses and having emergency measures in place;
- Avoidance of vandalism;
- Keeping all watercourses free from obstruction and debris;
- Keep impact of construction to a minimum on the local environment, watercourses and wildlife;
- Correct fuel storage and refuelling procedures to be followed;
- Good waste management and house-keeping to be implemented;
- Air and noise pollution prevention to be implemented; and,
- Monitoring of the works and any adverse effects that it may have on the environment.
- Construction Methods and designs will be altered where it is found there is an adverse effect on the environment;
- Comply with all relevant water quality legislation;
- Ensure a properly designed, constructed and maintained drainage system appropriate to the requirements of the site is kept in place at all times.

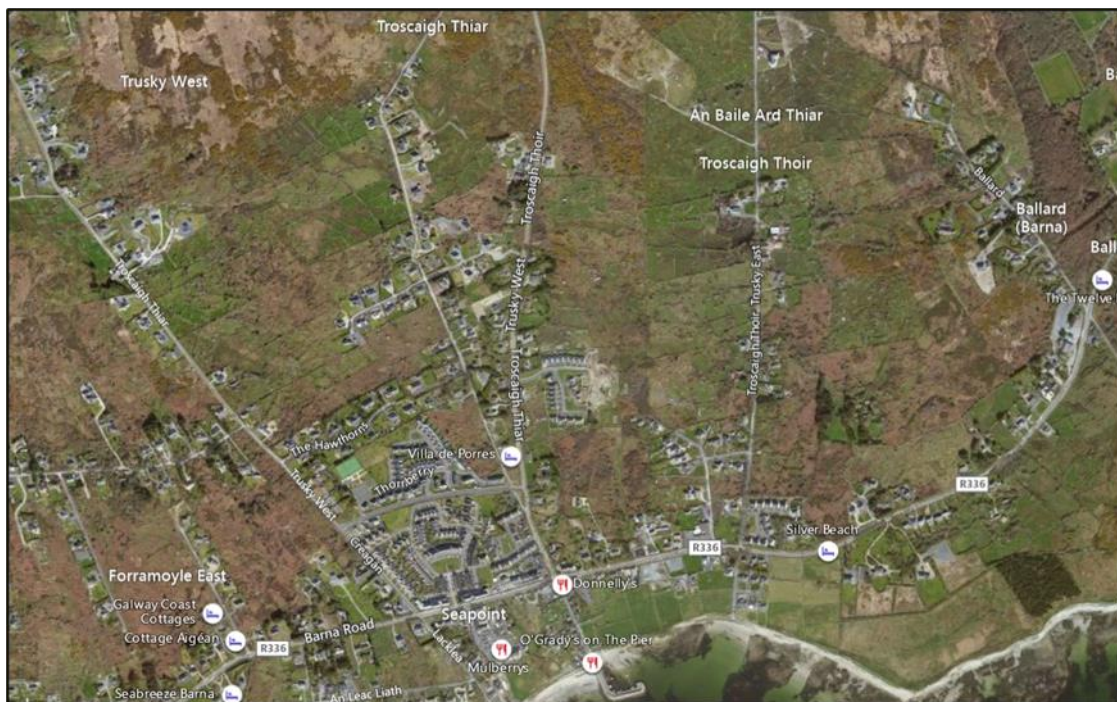


Figure 2-1 Site Location Map Aerial (Source – Bing Maps). Application Site outlined in Red (Indicative only)



Figure 2-2 Proposed Site Layout

2.4 Construction Methodology Overview

2.4.1 Introduction

The works will be completed in accordance with this CEMP and any modifications made to this document. An overview of the proposed Construction Methodologies is provided below under the following main headings:

- Site Enabling Works
- Temporary Site Compound
- Perimeter Hoarding
- Demolition of existing structures
- Site Excavation
- Site Roads
- Services and Utilities
- House Construction
- Landscaping Works

2.4.2 Site Enabling Works

The site will be accessed from the west of the site via a road that runs through Cnoc Fraoigh residential estate road. Prior to the commencement of any construction, this site entrance will need to be fully established with security gates. A parking area for construction worker's vehicles will be provided within the confines of the site. There will be no parking permitted for any vehicles associated with the project on the public road during the construction phase of the development.

2.4.3 Temporary Site Compound

A temporary construction compound is proposed for the construction phase of the proposed development, located inside the development footprint. The proposed temporary compound area incorporates temporary site offices, staff facilities and car-parking areas.

A dedicated waste management area will be located within the compound, with waste to be sorted and collected from site by permitted collectors. It is intended to utilise two temporary construction for the proposed phasing of construction works in both the north and south of the site the locations of which are identified in Figure 2-3



Figure 2-3 Proposed Site Compound Locations

Temporary toilets located at the site offices and welfare facilities will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. Power will be supplied by a diesel generator, located within the compound or via a temporary power supply if available. The construction compound will be used for temporary storage of some construction materials, prior to their delivery to the required area of the site.

2.4.4 Perimeter Hoarding

Perimeter hoarding will be provided around the site to provide a barrier against unauthorised access from the public areas. A controlled access point in the form of a gated main site entrance will be kept locked outside of normal working hours.

The hoarding will be well maintained and painted or covered with graphics portraying project information. Due to the nature of the works and the construction traffic using the site entrance, appropriate signage will be provided along the footpath and site entrance to alert pedestrians to the traffic exiting/entering the site. Likewise, appropriate signage will be installed within and outside the site to alert drivers of the pedestrians crossing ahead.

2.4.5 Demolition of Existing Structures

There are a total of three existing structures on the proposed site comprising two agricultural sheds and a portacabin, all of which are in various stages of disrepair.

Standard best practice construction methodologies will be adhered to during the demolition process. All buildings will be demolished by means of mechanical excavator. Where possible, any stone or rubble from the buildings will be reused on-site for infilling and landscaping works. The management of waste materials generated during the demolition phase is detailed in Section 3 of this document. All buildings to be demolished are detailed in Drawing no. 924-MDO-XX-XX-DR-A-00201

2.4.6 Site Excavation

Soil stripping and temporary stockpiling of soils and subsoils will be required around the site as the proposed development progresses. Where these works occur, the following will apply:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Gas Networks Ireland, Eir, Galway County Council etc. will be contacted and all drawings for all existing services sought.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- All plant operators and general operatives will be inducted and informed as to the identification of invasive species.
- A tracked 360-degree excavator will be used to strip the topsoil, and a dumper will be used to move the excavated materials to the temporary stockpile location.
- All excavated material will be reused for future landscaping works or for backfill of excavations.
- All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.

2.4.7 Site Roads

The construction methodology for the proposed access road is outlined as follows:

- Excavation will take place until a competent stratum is reached.
- The competent stratum will be overlain with up to 500mm of granular fill.
- A layer of geogrid/geotextile may be required at the surface of the competent stratum.
- A final hard surface layer will be placed over the excavated road to provide a road profile to accommodate construction traffic.
- Prior to completion of the construction works on site, the finished asphalt road surface will be applied.

2.4.8 Services and Utilities

The proposed on-site foul sewers will discharge to the existing gravity wastewater network at the existing adjacent Cnoc Fraoigh residential estate prior to it exiting the estate.

The surface water drainage system will consist of a gravity sewer network that will convey runoff from the roofs and paved areas of the development to outfall manholes, which will discharge at controlled flow rates to the Trusky stream. Discharge will be limited to the greenfield equivalent, QBARRURAL, runoff rate. This will be achieved using a Hydro-Brake flow restrictor prior to discharging to the Trusky

stream. Temporary underground attenuation will also be provided at two separate locations in the form of underground cellular storage units. Silt traps will be provided for upstream of the attenuation tanks. Surface water will pass through petrol interceptors prior to discharging from the site. The site drainage details are included in Appendix 4-1 of the EIAR.

To construct the surface water outfalls, the installation of two small precast concrete headwalls will be required along the Trusky stream. Non-return valves will be positioned at the outfalls. The following best practice construction measures will be followed to ensure that there are no significant effects on the Trusky Stream as a result of the proposed works:

- Prior to the outset of these works, small defined works areas will be fenced off at the location of each of the storm water outfalls (between the main construction site and the Trusky Stream). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Trusky Stream.
- The necessary pipelaying works will be undertaken within this defined area.
- Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Trusky Stream will be removed to facilitate the construction of the outfall.
- No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- Short sections of the Trusky Stream will be temporarily dammed with sandbags at times of low water. One dam will be constructed immediately downstream of the outfall point and the other, immediately upstream.
- A submersible pump will be used to overpump any flow within the stream from upstream to downstream of the dammed area.
- Any remaining surface water within the dammed area will be pumped to a discharge point over 30m from the Trusky Stream and within the main construction site. It will pass through a silt bag before discharge to ground.
- Machinery will not enter the water and the construction of the outfall will only occur after the dry working area is created.
- The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included).
- The banks and channel bed will be reinstated to avoid erosion or run off of silt.
- Following this the dams will be removed.
- Each surface water discharge point is likely to take less than one day to install.

Sondes will be put in place in the Trusky Stream upstream and downstream of the works area. These will continuously measure turbidity throughout the construction period. If there is a 10% or greater difference between upstream and downstream turbidity, an alarm will sound and a message will be sent to the site foreman and the ECoW. Works will be ceased until the cause of the difference is identified and (if it is associated with the works) rectified.

The installation of services and connections to the residential units will be carried out as follows:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Gas Networks Ireland, Eir, Galway County Council etc. will be contacted and all drawings for all existing services sought.
- A traffic management plan will be produced if required for connection works to the existing service network.
- A road opening licence will be obtained where required for connection to existing services.
- All plant operators and general operatives will be inducted and informed as to the location of any services.

- A tracked 360-degree excavator or similar will be used to excavate the trench to the required dimensions.
- All excavated material will be removed to an authorised waste recovery facility or, if suitable, stock piled and reused for backfilling and landscaping where appropriate.
- Once the trench has been excavated the ducting/pipework will then be placed in the trench as per specification.
- Once the service ducts/pipework has been installed couplers will be fitted as required and capped to prevent any dirt etc. entering the ducts/pipes.
- The as built location of the ducting/pipework will be surveyed using a total station/GPS.
- Backfill material will be carefully placed so as not to displace the ducting/pipework within the trench.
- The appropriate warning/marker tape will be installed above the ducts/pipes at the appropriate depths.
- The surface will be reinstated as per original specification or to the requirements of the site layout/Local Authority as appropriate.

Further details on the proposed drainage for the site is included in the Engineering Services Report included as Appendix 4-3 of the EIAR

2.4.9 Existing Underground Services

Any underground services encountered during the works will be surveyed for level and where possible will be left in place. If there is a requirement to move the service, then the appropriate body (ESB, Gas Networks Ireland, etc.) will be contacted, and the appropriate procedure put in place. Back fill around any utility services will be with dead sand/pea shingle where appropriate. All works will be in compliance with required specifications.

2.4.10 House Construction

The housing units will be constructed by the following methodology:

- The area where excavations are foundations are to be installed will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Gas Networks Ireland, Eir, Galway County Council etc. will be contacted and all drawings for all existing services sought.
- The area of each building will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to nearby storage area for later use in landscaping.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the area down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it;
- The block work walls will be built up from the foundation (including a Damp-proof Course (DPC) and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors;
- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the buildings for this operation;
- Any concrete flooring slabs will be lifted into position using an adequately sized mobile crane;
- The timber roof trusses will then be lifted into position using a teleporter or mobile crane depending on site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.

- Windows, electrics, plumbing and all other building components and services will be installed in as timely a manner as is possible.
- Each building will be inspected and certified by the project design engineer at the appropriate stages of construction.

2.4.11 Landscaping Works

Landscaping works will be carried out as part of site reinstatement and completion of the works. The landscaping finishes include areas of amenity grassland and tree planting. These works will involve the use of plant and machinery in order to carry out tasks such as earth moving. Materials which have been stockpiled for the task will be used as much as possible, and material will only be imported where it is required. Solid barriers will be erected around the site boundary for the duration of the construction works.

2.4.12 Construction Works Sequence

The sequencing of construction phase works has is summarised Table 2-1. This provides a schedule of the expected sequence of operations for the works to be completed during the construction phase.

Table 2-1 Sequence of Operations for the Construction Phase

No.	Operations
1	Foundations excavation and formation level establishment
2.	Foundations: formwork and steel reinforcement installation
3.	Masonry Blockwork: including insulation installation
4.	Carpentry 1 st fix: timber roof structure and coverings
5.	Window/Door installation
6.	Plastering (external)
7.	Painting (external)
8.	Internal services (electrical and plumbing)
9.	Plastering (internal)
10.	Floor: Sand and cement screed
11.	Services connection: electrical, sewage, telecoms.
12.	Painting (internal)
13.	Tiling: Floors, walls etc.
14.	Carpentry 2 nd fix: doors, flooring etc.
15.	Landscaping
16.	Road finishes: Tarmacadam roads and parking areas

3. ENVIRONMENTAL MANAGEMENT

3.1 Site Drainage

Prior to the commencement of any construction activities, mitigation measures will be put in place to ensure the protection of surface water during the works. Surface waters will be managed, allowing water to percolate naturally to ground.

Particular emphasis will also be placed on preventing any hazardous materials entering the surface water management system as well as spills or leaks of fuel oils. Section 4 provides an Emergency Response Plan for dealing with spillages which, if they occurred, could result in adverse environmental effects.

The excavation phase of the development has the potential to encounter sub-surface and ground water during the works. The following measures will be put in place to prevent the transportation of silt laden water or pollutants from entering the wider environments including downstream watercourses.

- A solid boundary fence will be constructed around the construction footprint in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint and the Trusky stream and its associated riparian habitat. No works will be undertaken outside the confines of this fence with the exception of the installation of the two surface water outfalls, which will be undertaken as a separate element of the development that is described below.
- A silt fence will also be attached to this boundary fence. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities.
- The silt fence will comprise a geotextile membrane that will be buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated.
- As construction advances there may be a small requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into sediment bags prior to overland discharge allowing water to percolate naturally to ground;
- Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing;
- Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present;
- Daily monitoring and inspections of site drainage during construction will be completed;
- Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses; and,
- Good construction practices such as wheel washers and dust suppression on site roads, and regular plant maintenance will ensure minimal risk.

In general, the site is quite steeply graded from the north (+24.0m AOD) to the southeast (+14.5m AOD), with levels along the western boundary typically +22.5m AOD to +15.1m AOD. The Trusky stream is immediately east of the site's boundary, which is similarly steeply graded, from north to south. There is no available existing surface water drainage infrastructure in the vicinity of the proposed development. However, the Trusky East Stream aligns the eastern boundary of the proposed development. All surface water runoff, on the existing site, currently infiltrates to the natural ground or

discharges to the Trusky East Stream, which in turn discharges to sea at Galway Bay, approximately 500m south from the proposed development.

For the operational phase, the surface water drainage system has been designed using Sustainable Drainage Systems (SuDS) principles. The proposed development has been divided into two catchments as shown in the Drainage Layout Drawing, Appendix 4-1 (of the EIAR), each discharging attenuated flows to the Trusky stream. The surface water drainage system will consist of a gravity sewer network that will convey runoff from the roofs and paved areas of the development to outfall manholes, which will discharge at controlled flow rates to the Trusky stream. Discharge will be limited to the greenfield equivalent, QBARRURAL, runoff rate. This will be achieved using a Hydro-Brake flow restrictor prior to discharging to the Trusky stream. Temporary underground attenuation will also be provided at two separate locations in the form of underground cellular storage units (refer to Drainage Layout Drawing Appendix 4-1). Silt traps will be provided for upstream of the attenuation tanks. Surface water will pass through hydrocarbon interceptors prior to discharging from the site.

Water supply to the site will be via connection to the adjacent public (Irish Water) watermain.

Wastewater from the development will discharge to the existing gravity wastewater network at the existing adjacent Cnoc Fraoigh residential estate prior to it exiting the estate (refer to Drainage Layout Drawing, Appendix 4-1).

3.2 Cement Based Products Control Measures

The complete washing out of concrete trucks will not be permitted at the site. However, a washout area for chute cleaning will be provided at various locations in close proximity to the concrete pour locations.

The following mitigation measures will be implemented to avoid release of cement leachate from the site:

- No batching of wet-cement products will occur on site;
- Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. Where possible pre-cast elements for culverts and concrete works will be used;
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;
- Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
- Use weather forecasting to plan dry days for pouring concrete;
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.

3.3 Refuelling, Fuel and Hazardous Materials Storage

The following measures are proposed to avoid release of hydrocarbons at the site:

- Minimal refuelling or maintenance of construction vehicles or plant will take place on site.
- Off-site refuelling will occur at a controlled fuelling station;
- On-site refuelling will take place by direct refuelling from the delivery truck or using a mobile double skinned fuel bowser. The fuel bowser, a double-axel custom-built

refuelling trailer will be re-filled off site and will be towed around the site as required. The fuel bowser will be parked on a level area in the construction compound when not in use. Only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.

- Fuels volumes stored on site will be minimised. Any fuel storage areas will be bunded appropriately for the volume of fuel stored. volume for the time period of the construction.
- The bunded area will be roofed to prevent the ingress of rainwater;
- The plant used will be regularly inspected for leaks and fitness for purpose; and,
- Spill kits will be available to deal with and accidental spillage in and outside the refuelling area. Spill control measures are outlined in the section that follows.

3.4 Spill Control Measures

Large volumes of oils/fuels will not be stored for the purpose of refuelling on the site. A bunded fuel tank will be stored at the temporary construction compound which will be used for smaller plant and equipment i.e. site dumpers and teleporters. This will be stored on an impermeable surface and will be equipped with spill kit. Onsite plant (excavator) will be refuelled by an external contractor who will call to site as required. Road vehicles will not be refuelled at the site.

In the event of minor spills and leaks from road vehicles and the onsite excavator the following steps provide the procedure to be followed in the event of any significant spill or leak.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- Cover or bund off any vulnerable areas where appropriate such as drains or watercourses.
- Clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the relevant authorities immediately giving information on the location, type and extent of the spill so that they can take appropriate action and further investigate the incident to ensure it has been contained adequately.
- External consultants will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.

3.5 Dust Control

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e. soil, sand, etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction and Demolition traffic movements also have the potential to generate dust as they travel along the haul route. In this regard it is not intended to undertake scientific dust monitoring during the construction phase. The Environmental Manager will be responsible for the daily monitoring and checks on dust originating from the site as well as the implementation of the mitigation measures to control dust which include:

- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions;
- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness, and cleaned as necessary;
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind;
- Water misting or bowsers will operate on-site as required to mitigate dust in dry weather conditions;
- The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary;
- All construction related traffic will have speed restrictions on un-surfaced roads to 15 kph;
- Daily inspection of construction sites to examine dust measures and their effectiveness.
- When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper; and,
- All vehicles leaving the construction areas of the site will pass through a wheel cleansing area prior to entering the local road network.

3.6

Noise & Vibration Control

The operation of plant and machinery, including construction vehicles, is a source of potential noise impacts. During the works, any plant introduced to the site will not be excessively noisy. Exhaust and silencer systems on plant will be maintained in a satisfactory condition and operating correctly at all times. Defective silencers will be immediately replaced. In this regard it is not intended to undertake scientific noise monitoring during the construction phase. The Environmental Manager will be responsible for the daily monitoring and checks on noise levels emanating from the site as well as the implementation of the mitigation measures to control noise levels which include:

Measures to control noise include:

- Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts;
- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All construction plant and equipment to be used on-site will be modern equipment and will comply with applicable legislation regulating permissible noise levels;
- Plant with the potential of generating noise or vibration will be placed as far away from sensitive properties as permitted by site constraints.
- Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works;
- Compressors will be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machines, which are used intermittently, will be shut down during those periods when they are not in use;
- Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation; and,
- Local areas of the haul route will be condition monitored and maintained if necessary.

- It is recommended that drivers of heavy goods vehicles (HGVs) associated with the development extend due care and courtesy to other road users. Excessive use of and unnecessary engine racing will be avoided.

The proposed construction working hours are as follows:

08:00 – 19:00 Monday to Friday

08:00 – 14:00 Saturday

Closed Sunday and Public Holidays

3.7 Invasive Species Management

A baseline invasive species survey will be carried out at the site to identify the presence and location of any invasive species (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011)) by a suitably qualified ecologist prior to the commencement of construction. In the event Invasive Species are discovered, an Invasive Species Management Plan will be prepared.

3.8 Traffic Management Proposals

3.8.1 Construction Traffic Access and Management

The following is a list of the proposed traffic management measures to be adopted during the construction works:

- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access locations;
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes;
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on HGVs carrying dust producing material;
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds;
- No vehicle will be allowed to stop or park on the access road to the proposed development site.
- Ample parking will be provided within the site to cater for the staff and visitors during the construction phases of the proposed development.
- On site wheel washing will be undertaken for construction vehicles to remove any debris prior to leaving the site, to remove any potential debris on the local roads if it is deemed necessary;
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. All scheduled maintenance will not be carried out on the public highway; and
- Minimal impact on the surrounding road network will be ensured.

Further details on traffic management proposals are included in the Design Process Traffic Management Plan included as Appendix 4-4 of the EIAR.

3.9 Construction & Demolition Waste Management Plan

This section of the CEMP provides a Construction and Demolition Waste Management Plan (CDWMP) which outlines the best practice procedures during the demolition of the existing building on site and the construction phase of the project. The CDWMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage. Disposal of waste will be seen as a last resort.

3.9.1 Legislation

The Waste Management Act 1996, as amended, and regulations provide for measures in relation to waste management, recycling and recovery and provide a regulatory framework for attaining the objectives of EU and Irish law.

The Act requires that anyone carrying out a waste activity must have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the site of the proposed development to ensure that all contractors hired to remove waste from the site have valid Waste Collection Permits and that waste is delivered to a licensed or permitted waste facility.

3.9.2 Guidance

The Department of the Environment provides a document entitled, ‘Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects’.

These Department of the Environment guidelines which been considered in the preparation of this CDWMP state that, at the design stage of the project, only a preliminary Waste Management Plan (WMP) is required,

“Formal production and presentation of the Plan may be at a later stage but a clear ‘waste management philosophy’ needs to be adopted...at the initial conceptual stage of the Project...”

This WMP – which will incorporate all the measures set out in this document will be finalised subsequent to any permission granted by An Bord Pleanála and will be updated prior to construction to include, inter alia, any additional requirements pursuant to relevant planning conditions imposed – has a number of key objectives as outlined below:

- To set out management prescriptions that adhere to a waste management hierarchy
- To outline the roles and responsibilities of the Waste Manager
- Prevention and minimisation of waste at the construction stage of the development.

3.9.3 Waste Management Hierarchy

The waste management hierarchy sets out the most efficient way of managing waste in the following order:

Prevention and Minimisation:

The primary aim of the WMP is to prevent and thereby reduce the amount of waste generated at each stage of the project.

Reuse of Waste:

Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site.

Recycling of Waste:

There are a number of established markets available for the beneficial use of Construction waste such as using waste concrete as fill for new roads.

At all times during the implementation of the WMP, disposal of waste to an appropriately licenced facility will be considered only as a last resort.

3.9.4 **Demolition Waste Management**

The demolition phase of the proposed development will involve the removal of three existing structures from within the site comprising two agricultural sheds and a portacabin.

Prior to the commencement of any demolition, excavation or construction works at the site works at the site a full audit of waste that will be generated on site will be carried out. For the purposes of this CEMP a list of expected waste types that may be generated has been drawn up and the European Waste Catalogue Codes pertaining to each waste type is included in Table 3-1. The lists have been prepared following a visit to the proposed development site and inspection of the existing buildings but do not constitute a full waste audit.

Prior to any demolition works, a detailed asbestos survey will be carried out, if deemed necessary. If any Asbestos Containing Material is identified, it will be removed and disposed by an appointed specialist asbestos management company.

Table 3-1 Expected waste types arising from the Demolition Phase

Materials Type	Example	EW Code
Soil & Stones	Overburden, soil, subsoil	17 05 04
Concrete	Surfacing, flooring material	17 01 01
Mixture of inert material	Sand, stones, plaster, rock	17 01 07
Metals	Agricultural Shed Components	17 04 07

3.9.4.1 **Waste Arising from Demolition Activities**

The majority of the waste generated by the demolition phase will consist of concrete rubble from the shed’s foundations and metals from the shed’s walls and roofing. The remaining volume of waste material will be segregated according to type into individual skips pending removal by authorised waste collection contractors. The actual waste categories that will be subject to segregation during the demolition phase will be determined by the expected volumes of specific waste categories which will be assessed by the Waste Manager prior to any demolition works. Where a category of waste forms a smaller quantity, this will be disposed of in a general waste skip along with other categories of waste the volume of which does not warrant individual segregation This general waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be further sorted into individual waste streams for recycling, recovery or disposal.

3.9.5 Excavated Materials Management Plan

The excavation phase of the proposed development will require the removal and management of the materials from the foundation excavations. It is anticipated that some of the material will be re-used on site for landscaping, backfilling and general restoration of excavated areas.

All excavated material which is not required for future landscaping works or for backfill of excavations will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site.

3.9.6 Construction Phase Waste Management Plan

The first significant quantity of waste to be generated during the construction phase of the project will be the excavation for the associated foundations. This will generate a significant quantity of soil and subsoil material as a result of the excavation. Although a quantity of this material will be used for landscaping, backfilling and general restoration of excavated areas, it is anticipated that a quantity of this material will be exported off site by a licenced haulier to an authorised waste facility.

Waste generated post excavation on site will be managed in the Waste Storage Area (WSA) where the various waste components will be segregated into a number of waste categories in accordance with a general waste segregation policy and placed into individual skips. The categories for segregation will include, timber, metal, cardboard and plastics. This material will be removed by authorised waste collection contractors for recycling and recovery at various licensed facilities. The remaining volume of waste material which cannot be allocated to any of these four waste streams will be disposed of in a general waste skip. This waste material will be transferred to a Materials Recovery Facility by a fully licensed waste contractor where the waste will be further sorted into individual waste streams for recycling, recovery or disposal. This general waste will be subject to constant monitoring by site management to ensure that potential reusable and recyclable material is not being disposed of therein. The on-site canteen will include waste receptacles for dry recyclables and food waste which will eliminate the potential of any waste produced within the canteen being sent to landfill. The expected wastes arising from the works including the individual European Waste Catalogue (EWC) codes are outlined in Table 3-2.

Table 3-2 Expected waste types arising during the Construction Phase

Materials type	Example	EWC Code
Cables	Electrical wiring	17 04 11
Concrete	Surfacing, flooring material	17 01 01
Insulation	Cavity & Floor Insulation	17 06 04
Tiles and ceramics	Wall and floor tiles	17 02 03
Bituminous materials	Tarmacadam	17 03 01
Metals	Rebar, reinforced steel joists, lead	17 04 07
Mixture of inert material	Sand, stones, plaster, rock	17 01 07
Plastic	PVC frames, electrical fittings	17 02 03
Soil & Stones	Overburden, soil, subsoil	17 05 04

Materials type	Example	EWC Code
Gypsum materials	Roof tiles/slabs	17 08 02
Wood	Frames and doors,	17 02 01
Canteen Waste	Miscellaneous waste from site staff	20 01 08

The potential for re-use of materials on the site during the works will be minimal however clean inert concrete, rubble and stones may have a re-use potential for landscaping and site restoration. However, considering the major excavation works on the site have been completed, the quantity of such material being generated will be minimal and is likely to be reused locally.

3.9.6.1 Waste Arisings and Proposals for Minimisation, Reuse and Recycling of Construction Waste

Construction waste will arise on the project mainly from excavation and unavoidable construction waste including material surpluses and damaged materials and packaging waste.

Appropriate measures will be taken to ensure excess waste is not generated during construction, including;

- Ordering of materials will be on an ‘as needed’ basis to prevent over supply to site.
- Purchase of materials pre-cut to length to avoid excess scrap waste generated on site.
- Require suppliers to use least amount of packaging possible on materials delivered to the site.
- Ensuring correct storage and handling of goods to avoid unnecessary damage that would result in their disposal
- Ensuring correct sequencing of operations.
- Use reclaimed materials in the construction works.

Hazardous waste will be kept separate from all other construction waste to prevent contamination and removed to an appropriately licenced appropriately. In addition to fuel as outlined above, the potentially hazardous wastes that may be generated at the site during the construction include;

- Paints including all associated by products
- Glues and solvents
- Asphalt materials from roofing products and external paving finishes
- Asbestos (if identified prior to demolition works as summarised above)

3.9.7 Waste Arising from Construction Activities

The expected waste volumes generated on site are unlikely to be large enough to warrant source segregation or a dedicated waste storage area. Wastes will generally comprise soils and subsoils which will be removed by truck to an appropriately licenced facility.

3.9.7.1 Reuse

Many construction materials can be reused a number of times before they have to be disposed of:

- Concrete can be reused as aggregate for roads backfilling material.
- Plastic packaging etc. can be used to cover materials on site or reused for the delivery of other materials.

3.9.7.2 Recycling

If a certain type of construction material cannot be reused on site, then recycling is the most suitable option.

All waste that is produced during the construction phase including dry recyclables will be sent directly for subsequent segregation at a remote facility. The low volume of such material that is anticipated to be generated at the proposed development is the justification for adopting this method of waste management.

3.9.8 Wastewater

The removal and disposal of wastewater from site welfare facilities, will be carried out by a fully permitted waste collector holding valid Waste Collection Permits as issued under the Waste Management (Collection Permit) Regulations 2007, as amended. Information on the appointed permitted contractor and evidence of a maintenance will be retained on site and available for inspection on request.

3.9.9 Implementation

3.9.9.1 Roles and Responsibilities for Waste Management

Prior to the commencement of the proposed development a Waste Manager will be appointed by the project team. The role of Waste Manager is likely to be fulfilled by the Site Manager given the scale of the development and will be responsible for the implementation of the objectives of this plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated will have sufficient authority so that they can ensure everyone working on the proposed development adheres to the management plan. The Waste Manager will also be required to conduct regular waste audits in the WSA and throughout the site to ensure that the waste management plan is operating effectively.

3.9.9.2 Training

The Construction Waste Manager will communicate effectively with colleagues in relation to the aims and objectives of the WMP. All employees working on site during the construction phases of the project will be trained in materials management and thereby, will be able to:

- Distinguish reusable materials from those suitable for recycling;
- Ensure maximum segregation at source;
- Co-operate with site manager on the best locations for stockpiling reusable materials;
- Separate materials for recovery; and
- Identify and liaise with waste contractors and waste facility operators.

3.9.9.3 Record Keeping

The implementation of the WMP will ensure that all arisings, movements and treatments of construction waste to be recorded. This system will enable records the quantity of waste being generated to be maintained. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping.

The fully licensed waste contractor employed to remove waste from the site will be required to provide documented records for all waste dispatches leaving the site of the proposed development. Each record will contain the following:

- > Consignment Reference Number
- > Material Type(s) and EWC Code(s)
- > Company Name and Address of Site of Origin
- > Trade Name and Collection Permit Ref. of Waste Carrier
- > Trade Name and Licence Ref. of Destination Facility
- > Date and Time of Waste Dispatch
- > Registration no. of Waste Carrier vehicle
- > Weight of Material
- > Signature of Confirmation of Dispatch detail
- > Date and Time of Waste Arrival at Destination
- > Weight of Material
- > Site Address of Destination Facility

3.9.10 **Waste Management Plan Conclusion**

The WMP will be adhered to by all staff involved in the project which will be outlined within the induction process for all site personnel. The waste hierarchy will always be employed when designing the plan to ensure that the least possible amount of waste is produced during the construction phase. Reuse of certain types of construction wastes will cut down on the cost and requirement of raw materials therefore further minimising waste levels.

4. ENVIRONMENTAL MANAGEMENT IMPLEMENTATION

4.1 Roles and Responsibilities

4.1.1 Construction Manager/Site Supervisor

The Construction Manager/Site Supervisor will have overall responsibility for the organisation and execution of all related environmental activities as appropriate, in accordance with regulatory and project environmental requirements. The duties and responsibilities of the Site Supervisor/Construction Manager will include:

- Ensure that all works are completed safely and with minimal environmental risk;
- Implement the CEMP and supporting environmental documentation, and ensure that all environmental standards are achieved during the construction phase of the project;
- Take advice from the Site Environmental Manager on legislation, codes of practice, guidance notes and good environmental working practice relevant to their work;
- Ensure compliance through audits and management site visits;
- Ensure timely notification of environmental incidents; and,
- Ensure that all construction activities are planned and performed such that minimal risk to the environment is introduced.

4.1.2 Environmental Manager

The required level of supervision on site will be provided by an Environmental Manager who will also fulfil the role of Waste Manager. Due to the scale of activity proposed for the site, this role can be adopted by a Site Manager/Foreman as part of their duties. In general, this Environmental Manager will maintain responsibility for monitoring the works from an environmental perspective. The Environmental Manager will act as the regulatory interface on environmental matters by reporting directly to the client and liaising with Galway County Council and other statutory bodies as required. The Site Environmental Manager will report to the Site Supervisor/Construction Manager. The duties of the appointed Environmental Manager are summarised as follows:

- Maintain and update as required the Construction Phase CEMP and supporting environmental documentation and review/approval of method statements;
- Undertake inspections and reviews to ensure the works are carried out in compliance with the CEMP;
- Monitor the implementation of the CEMP, particularly all proposed/required Environmental Monitoring;
- Generate environmental reports as required to show environmental data trends and incidents and ensure environmental records are maintained throughout the construction period;
- Advise site management/contractor/sub-contractors on:
 - Prevention of environmental pollution and improvement to existing working methods;
 - Changes in legislation and legal requirements affecting the environment;
 - Suitability and use of plant, equipment and materials to prevent pollution;
 - Environmentally sound methods of working and systems to identify environmental hazards;
- Ensure the mitigation measures are effectively implemented during the construction phase;

- Liaise with Project Team and present the findings of site audits/inspections that are completed;
- Ensure adequate arrangements are in place for site personnel to identify potential environmental incidents;
- Ensure that details of environmental incidents are communicated in a timely manner to the relevant regulatory authorities, initially by phone and followed up as soon as is practicable by email;
- Support the investigation of incidents of significant, potential or actual environmental damage, and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties;
- Identify environmental training requirements and arrange relevant training for all levels of site-based staff/workers; and
- Fulfil the role of Waste Manager and implement the objectives of the Waste Management Plan as set out in Section 3 above.
- Coordinate the Emergency Response in terms of site health and safety and environmental protection as outlined in the section below

4.2 Monitoring

The surface water quality monitoring programme combines the use of laboratory analysis, water quality monitoring instrumentation and visual inspection to develop a comprehensive schedule of monitoring of all watercourse that exist both at the site and the surrounding area. This provides an inspection and maintenance plan for the on-site drainage systems and mitigation measures will be prepared in advance of commencement of any works and for the duration of construction. Regular inspections of all installed drainage systems and controls will be undertaken daily, to check that the integrity of silt fencing, for example, is intact. Daily visual checks of the stream will also be carried out.

4.2.1 Pre-Construction Drainage Inspection and Monitoring

There is an existing drainage network across the site and runoff drains relatively freely to local watercourses. This existing drainage system will continue to function as it is during the pre-construction phase.

However, prior to commencement of works, inspections will be completed to ensure watercourses are free from debris and blockages that may impede drainage.

Monthly Laboratory Analysis Sampling: Baseline laboratory analysis for the parameters listed below with relevant regulatory limits and Environmental Quality Standards (EQSs) will be undertaken.

4.2.2 Construction Phase Drainage Inspection and Monitoring:

Inspection sheets and photographic records will be kept on site. Inspection points will include the in-situ field monitoring point locations and the laboratory analysis sampling points. Inspection points will depend on works being completed. Visual inspections will also be completed after major rainfall events, i.e. after events of >25mm rainfall in any 24-hour period and data including photographs will be collected by visual inspections completed by the Environmental Manager.

The following periodic inspection regime will be implemented:

- Daily general visual inspections of site operations and inspections of all watercourses within the site and in the surrounding area by the Environmental Manager or a suitably qualified and competent person as delegated;

- Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly and to identify and maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter should be noted and corrective action should be implemented. High risk locations such as settlement ponds will be inspected daily. Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement;
- Event based inspections by the ECoW as follows:
 - >10 mm/hr (i.e. high intensity localised rainfall event);
 - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
 - Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week)

During the construction phase, field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will continue for the adjacent Truskey stream.

Field chemistry measurements of unstable parameters, (pH, conductivity, dissolved oxygen, temperature) will be taken at the two surface water monitoring locations on the Truskey stream, subject to agreement with Galway County Council. In-situ field monitoring will be completed on a monthly basis.

Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken prior to construction at two locations on the Truskey stream.

The analytical determinants of the monitoring programme will be as set out below and carried out quarterly.

- pH (field measured)
- Electrical Conductivity (field measured)
- Temperature (field measured)
- Dissolved Oxygen (field measured)
- Total Suspended Solids
- Total Phosphorus
- Chloride
- Nitrate
- Nitrite
- Total Nitrogen
- Ortho-Phosphate
- Ammonia N
- Biochemical Oxygen Demand

4.2.3 Surface Water Monitoring Reporting

Visual inspection and laboratory analysis results of water quality monitoring shall assist in determining requirements for any necessary improvements in drainage controls and pollution prevention measures implemented on site.

It will be the responsibility of the Environmental Manager to present the ongoing results of water quality and weather monitoring at or in advance of regular site meetings.

Reports on water quality will consider all field monitoring and visual inspections, and results of laboratory analysis completed for that period. Reports will describe how the results compare with baseline data as well as previous reports on water quality. The reports will also describe whether any deterioration or improvement in water quality that has been observed and whether any effects are

attributable to construction activities and what remedial measures or corrective actions have been implemented.

All water monitoring reports will be available to Galway County Council on request at any stage during the construction phase

4.3 Emergency Response

The Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection. The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require finalisation upon receipt of submissions from the PSCS and suppliers as the proposed project progresses. Where sub-contractors that are contracted on site are governed by their own emergency response procedure an arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this document (which shall be a "live" document).

4.3.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 4-1. In a situation where the Site Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 4-1. This will be updated throughout the various stages of the project.

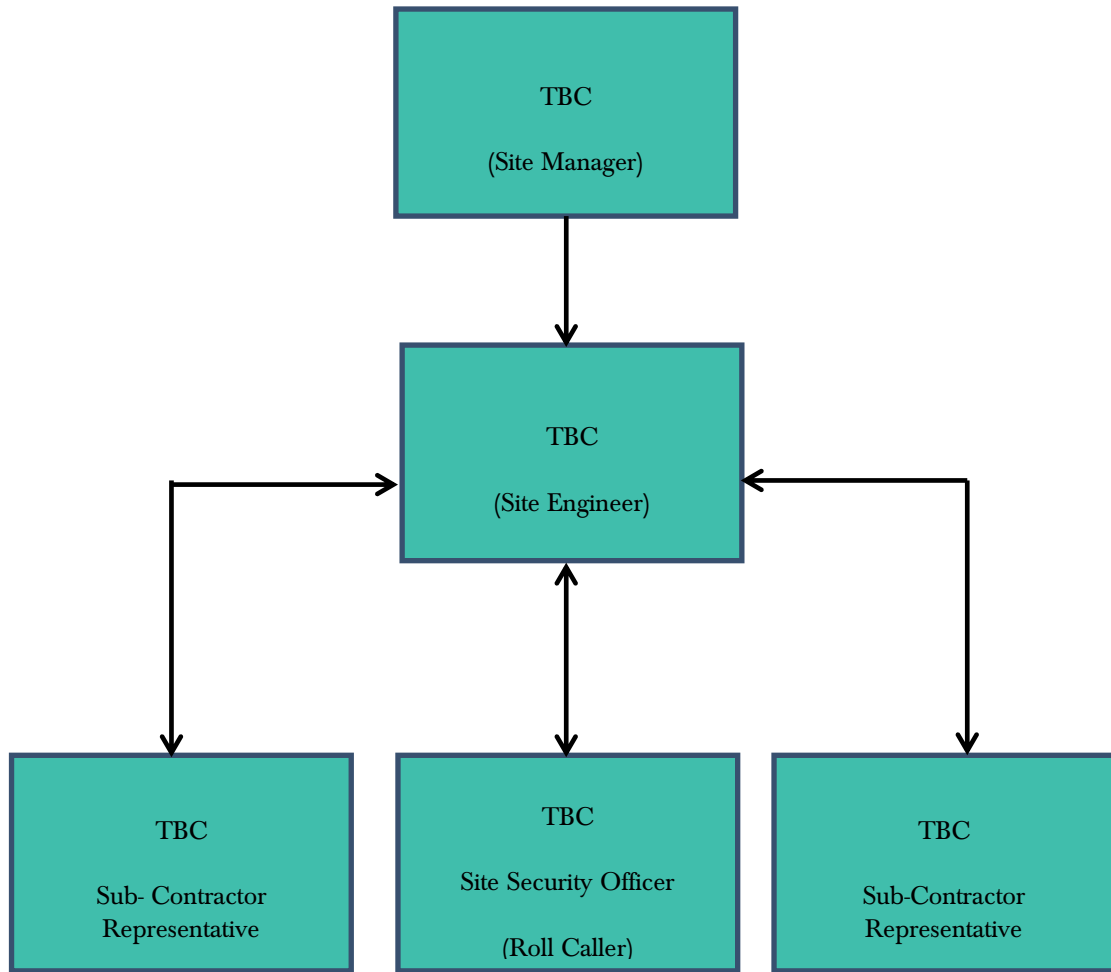


Figure 4-1 Emergency Response Procedure Chain of Command

4.3.2 Initial Steps

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

Table 4-1 Hazards associated with potential emergency situations

Hazard	Emergency Situation
Construction Vehicles: Dump trucks, tractors, excavators, cranes etc.	Collision or overturn which has resulted in operator or third-party injury.
Abrasive wheels/Portable Tools.	Entanglement, amputation or electrical shock associated with portable tools.
Contact with services.	Electrical shock or gas leak associated with an accidental breach of underground services.
Fire	Injury to operative through exposure to fire.
Sickness	Illness unrelated to site activities of an operative e.g. heart attack, loss of consciousness, seizure.

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 4-1 the Site Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/fog horn that activates an emergency evacuation on the site.
- Make safe the area if possible and ensure that there no identifiable risk exists with regard to dealing with the situation e.g. if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if he is unable to do so. If delegating the task, ensure that they follow the procedures for contacting the emergency services as set out in Section 4.4.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g. cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g. ESB Networks the numbers for which as provided in Section 4.4.2.
- Contact the next of kin of any injured personnel where appropriate. The procedure for this is outlined in Section 4.4.3.

4.3.3 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction and operational phase of the proposed project. Oil/Fuel spillages are one of the main environmental risks that will exist on the proposed site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring is essential. The following steps provide the procedure to be followed in the event of such an incident.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- Cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- Clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The Environmental Manager will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The Environmental Manager will notify the appropriate regulatory body such as Galway County Council, The Department of Communications, Climate Action and Environment and the Department of Housing, Planning and Local Government , if deemed necessary.

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The Environmental Manager must be immediately notified.

- The Environmental Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used to follow the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- If the incident has impacted on an ecologically sensitive receptor, such as a sensitive habitat, protected species or designated natural conservation site, the Environmental Manager will liaise with a Project Ecologist.
- If the incident has impacted on a sensitive receptor such as an archaeological feature the Environmental Manager will liaise with a Project Archaeologist.
- A record of all environmental incidents will be kept on file by the Environmental Manager. These records will be made available to the relevant authorities such as Galway County Council, as required.

The Environmental Manager will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling.

4.4 Contacting the Emergency Services

4.4.1 Emergency Communications Procedure

A list of emergency contacts is presented in Table 4-2. A copy of these contacts will be included in the Site Safety Manual and in the site offices and the various site welfare facilities.

Table 4-2 Emergency Contacts

Contact	Telephone no.
Emergency Services – Ambulance, Fire, Gardaí	999/112
Doctor – Barna Medical Centre	091 596 510
Hospital – University Hospital, Galway	091 524 222
ESB Emergency Services	1850 372 999
Gas Networks Ireland	1850 20 50 50
Gardaí – Salthill Garda Station	091 514 720
Health and Safety Coordinator - Health & Safety Services	TBC
Health and Safety Authority	1890 289 389
Project Supervisor Construction Stage (PSCS): TBC	TBC
Client – Burkeway Homes Ltd	TBC

4.4.2 Procedure for Personnel Tracking

All operatives on site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.

In the event of a site operative becoming involved in an emergency situation where serious injury has occurred, and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

4.4.3 Induction Checklist

Table 4-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the project.

Table 4-3 Emergency Response Plan Items Applicable to the Site Induction process

ERP Items to be included in Site Induction	Status
All personnel will be made aware of the evacuation procedure during site induction.	
Due to the location of the site it may be necessary to liaise with and assist the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This will form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.	
All operatives on site without any exception will have undergone a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.	

5.

MITIGATION MEASURES

The Mitigation Measures which will be implemented are presented in this section of the CEMP. The CEMP will be finalised subsequent to any permission granted by An Bord Pleanála and will be updated prior to construction to include, inter alia, any additional requirements pursuant to relevant planning conditions imposed.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the project.

Table 5-1 Mitigation Measures

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
Pre-Commencement Phase			
1	All measures identified in this Construction Environmental Management Plan, which will be finalised subsequent to any permission granted by An Bord Pleanála and updated prior to construction will include all mitigation measures identified to be adhered to during the pre-commencement, construction and operational phases of the proposed development.		
2	Construction Manager engaged who will also fulfil the role of Environmental Manager (EM), and to monitor all site works and to ensure that methodologies and mitigation are followed throughout construction to avoid negatively impacting on the receiving environment.		
3	Prior to the commencement of any excavation or construction activities, the works area will be clearly demarcated with fencing and no works will take place outside the fences. Where potential for run off from the site is identified (i.e. along the stream to the east) a silt fence will be attached to the fencing and buried beneath the ground to filter any runoff that may occur as a result of the proposed works.		
4	The compound for the site will be of adequate size to accommodate site staff parking appropriate to the level of site activity anticipated for a site of this scale.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
Construction Phase			
Construction Management			
5	A site-specific Health and Safety Plan will be in place for the proposed facility. In the event that Covid-19 restrictions are in place at the commencement of the construction phase, the Health and Safety Plan will include provisions regarding compliance with relevant Covid-19 restrictions. All site staff will be made aware of and adhere to the Health and Safety Plan		
6	A Site Induction Process for all site staff will be maintained which will also ensure all staff will have current 'Safe Pass' cards		
7	Only appropriately qualified and trained personnel will be permitted to operate machinery onsite.		
8	The proposed development site will not be accessible to members of the public. Appropriate barriers and signage will be used. The site will also be secured to prevent the risk of trespass through signage and provision of barriers.		
9	Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. No batching of wet-cement products will occur on site.		
10	No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;		
11	Whilst significant inundation of surface or ground water is not anticipated, any such water arisings that require pumping out during construction will be discharged to ground		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	within the site through a silt bag at a distance of over 30m from the Trusky Stream. There will be no direct discharge of construction waters to any watercourse.		
Drainage and Surface Water Quality			
12	<ul style="list-style-type: none"> ➤ All plant and machinery will be serviced before being mobilised to site. ➤ No refuelling of machinery or overnight parking of machinery is permitted in areas adjacent to watercourses or on-site drainage infrastructure. ➤ On-site refuelling will only take place at distances greater than 50 metres from nearest water courses or site drainage infrastructure. ➤ On-site refuelling of machinery will be carried out using an oil company vehicle sourced from a local supplier. Only dedicated trained and competent personnel will carry out refuelling operations. A spill kit and drip tray shall be on site at all times and available for all refuelling operations. Equipment shall not be left unattended during refuelling. ➤ Spill kits shall be available in each item of plant required. ➤ Care will be taken at all times to avoid contamination of the environment with contaminants other than hydrocarbons, such as uncured concrete or other chemicals. The plant refuelling procedures described above shall be detailed in the method statements. 		
13	<ul style="list-style-type: none"> ➤ A solid boundary fence will be constructed around the construction footprint in order to create a defined perimeter for the proposed works, leaving a natural vegetation buffer between the construction footprint and the Trusky stream and its associated riparian habitat. No works will be undertaken outside the confines of this fence with the exception of the installation of the two surface water outfalls, which will be undertaken as a separate element of the development that is described below. 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<ul style="list-style-type: none"> ➤ A silt fence will also be attached to this boundary fence. This will protect the stream from any potential sediment laden surface water run-off generated during construction activities. ➤ The silt fence will comprise a geotextile membrane that will be buried beneath the ground to filter any run-off that may occur as a result of the proposed works. The silt fence will be monitored throughout the proposed works and will remain in place after the works are completed and until the exposed earth has re-vegetated. ➤ As construction advances there may be a small requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into sediment bags prior to overland discharge allowing water to percolate naturally to ground; ➤ Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing; ➤ Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present; ➤ Daily monitoring and inspections of site drainage during construction will be completed; ➤ Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses; and, ➤ Good construction practices such as wheel washers and dust suppression on site roads, and regular plant maintenance will ensure minimal risk. 		
14	<p>The following best practice construction measures will be followed to ensure that there are no significant effects on the Trusky Stream as a result of the proposed works:</p> <ul style="list-style-type: none"> ➤ Prior to the outset of these works, small defined works areas will be fenced off at the location of each of the storm water outfalls (between the main 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<p>construction site and the Trusky Stream). Silt fences will be attached to these fences. The silt fence will provide a solid barrier between the proposed pipelaying works and the Trusky Stream.</p> <ul style="list-style-type: none"> ➤ The necessary pipelaying works will be undertaken within this defined area. ➤ Following the installation of the pipework and reinstatement of the ground, the small section of the silt fence that protects the Trusky Stream will be removed to facilitate the construction of the outfall. ➤ No instream works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters. ➤ Short sections of the Trusky Stream will be temporarily dammed with sandbags at times of low water. One dam will be constructed immediately downstream of the outfall point and the other, immediately upstream. ➤ A submersible pump will be used to overpump any flow within the stream from upstream to downstream of the dammed area. ➤ Any remaining surface water within the dammed area will be pumped to a discharge point over 30m from the Trusky Stream and within the main construction site. It will pass through a silt bag before discharge to ground. ➤ Machinery will not enter the water, the construction of the outfall will only occur after the dry working area is created. ➤ The bankside will be excavated and a small pre-cast concrete headwall installed (with outfall pipe included). ➤ The banks and channel bed will be reinstated to avoid erosion or run off of silt. ➤ Following this the dams will be removed. ➤ Each surface water discharge point is likely to take less than one day to install. 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	Biosecurity measures will be strictly adhered to throughout the proposed works. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work. Where staff are working instream, staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkron Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Sand bags placed instream will not be re-used in other watercourses.		
15	Gross pollutants, sediments, hydrocarbons, and other impurities, will be removed at source with the following provisions: <ul style="list-style-type: none"> ➤ Permeable Paving to all in-curtilage car parking areas; ➤ Intensive landscaping, where practicable; ➤ Silt-traps prior to attenuation storage area. ➤ All road gullies are to be trapped; ➤ Fuel separator prior to discharge from the development. 		
16	Attenuation storage is to be provided for the 100-year return period rainfall event (including an increased 20% rainfall intensity; to allow for climate change). Discharge from site is to be achieved through the use of a vortex flow control device (e.g. Hydro-Brake Optimum, by Hydro-International, or similar approved), which will reduce the risk of blockage present with other flow devices.		
17	To mitigate for the potential disturbance of fauna during construction the applicable mitigation measures set out in the CEMP, including the following measures, will be implemented: <ul style="list-style-type: none"> ➤ Plant and machinery will be turned off when not in use. 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<ul style="list-style-type: none"> ➤ All works will be completed during daylight hours and there will be no requirement for artificial lighting at any stage of the proposed construction works. This will avoid any potential impacts on crepuscular or nocturnal species including bat species. ➤ Vegetation removal will be conducted in line with the provision of the Wildlife Act to avoid nesting songbirds ➤ The Trusky Stream will be fenced off during construction (with the exception of short term works associated with the construction of the surface water outfalls) with no disturbance to the stream or the riparian area. 		
18	<ul style="list-style-type: none"> ➤ Works shall not take place at periods of high rainfall, and shall be scaled back or suspended if heavy rain is forecast; ➤ Machinery deliveries shall be arranged using existing structures along the existing road; ➤ Any excess construction material shall be immediately removed from the area and sent to an authorized waste recovery facility; ➤ Spill kits shall be available in each item of plant required; ➤ Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing; ➤ Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where drains or drainage pathways are present 		
19	<ul style="list-style-type: none"> ➤ No instream/bankside works will take place outside the period July 1st – September 31st in line with Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters. ➤ Works associated with the headwalls construction will be supervised by an ecologist. ➤ The headwalls will be installed in the dry, either by damming the stream upstream and downstream of the headwall locations and over pumping from upstream to 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<p>downstream, or by using sand-bags to create a dry area where works can occur, whilst still allowing the stream to flow.</p> <ul style="list-style-type: none"> ➤ Any remaining surface water within the bunded area will be pumped from within the bund using a suitably sized de-watering pump. A screen will be placed on the suction end of the pump to prevent coarse material/sediment being pumped. The pumped water will be discharged to ground at a location over 30m from the watercourse and will be filtered through a silt bag prior to discharge. ➤ Machinery will not enter the water, the minor excavations will be undertaken from the bank and the pre-cast concrete headwalls will be placed into the stream bank. 		
20	<p>Surface and/or ground water generated from the works during construction will be discharged to ground on the site through a silt bag. There will be no direct discharge of construction waters to any watercourse.</p>		
21	<p>Management of excavation seepages and subsequent treatment prior to discharge into the site drainage network will be undertaken as follows:</p> <ul style="list-style-type: none"> ➤ Appropriate temporary interceptor drainage, to prevent upslope surface runoff from entering excavations will be put in place, as required; ➤ If required, pumping of excavation inflows will prevent build-up of water in the excavation; ➤ The pumped water volumes will be discharged to ground within the site through a silt bag at a distance of over 30m from the Trusky Stream. ➤ There will be no direct discharge to any water body, and therefore no risk of hydraulic loading or contamination will occur. 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
22	<ul style="list-style-type: none"> ➤ A self-contained port-a-loo with an integrated waste holding tank will be used at the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works; and, ➤ No wastewater will be discharged on-site during either the construction or operational phase. 		
23	<ul style="list-style-type: none"> ➤ No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place; ➤ No washing out of any plant used in concrete transport or concreting operations will be allowed on-site; ➤ Where concrete is delivered on site, only the chute need be cleaned, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water is to be tanked and removed from the site to a suitable, non-polluting, discharge location; ➤ Use weather forecasting to plan dry days for pouring concrete; and, ➤ Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event. 		
24	<ul style="list-style-type: none"> ➤ Excavated (existing) overburden material will be reused on site, where possible; ➤ A minimal volume of topsoil and subsoil will be removed to allow for infrastructural work to take place due to optimisation of the layout by mitigation by design; and, ➤ Construction of service trenching, and surface water attenuation features will generate excess material, and all excess material will be used locally within the site for achieving building formation levels and landscaping. 		
25	<ul style="list-style-type: none"> ➤ All plant and machinery will be serviced before being mobilised to site; 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<ul style="list-style-type: none"> ➤ No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed; ➤ Refuelling will be completed in a controlled manner using drip trays at all times; ➤ Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water; ➤ Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores; ➤ Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored; ➤ Ancillary equipment such as hoses and pipes will be contained within the bund; ➤ Taps, nozzles or valves will be fitted with a lock system; ➤ Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage; ➤ Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills; ➤ Only designated trained operators will be authorised to refuel plant on site; ➤ Procedures and contingency plans will be set up to deal with emergency accidents or spills; and, ➤ An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment. 		
26	Water quality risks are mitigated by the use of hydrocarbon interceptors and silt traps.		
27	The risk of pluvial and or fluvial flooding is minimised by the incorporation of a properly designed surface drainage and gravity sewer network, and by using underground attenuation tanks for drainage management which will control discharge to the Trusky Stream at pre-development greenfield rates.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
28	<p>The risk of uncontrolled emissions is minimized by the collection, treatment and discharge of storm water to the Trusky Stream via silt traps, attenuation tanks and petrol/oil interceptors as described above. It is also proposed to retain and enhance the existing riparian zone which will act as a buffer between the development and that stream.</p> <p>Waste water will be directed to an EPA regulated waste water treatment plant.</p>		
29	<p>During the operational phase all surface water arising on site will drain to attenuation tanks and a Hydro-Brake flow restrictor and hydrocarbon interceptor prior to discharging to the Trusky Stream. Groundwater quality risks are reduced during the operational phase by use of paved areas as well as the hydrocarbon interceptors, attenuation tanks and silt traps prior to discharge.</p>		
30	<p>The underlying in-situ soils and subsoils will be subject to a certain amount of compaction, but this will be unavoidable.</p> <p>Any infill material/landscaping that is required will be placed and levelled in appropriate lift thicknesses to ensure the material is not over compacted thereby retaining its drainage properties. This will be relevant along the proposed linear park and landscaped areas of the site.</p>		
Biodiversity			
31	<p>The proposed development has been designed to maintain connectivity through the site and along the Trusky Stream with no works proposed within over 10 metres of it (with the exception of the construction of two surface water outfalls and some minor landscaping works.</p>		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
32	A landscape plan has been prepared for the development. The landscape plan allows for the planting of woodland, treeline, hedgerow and wildflower meadows consisting of a mix of native and naturalised species, as well as pollinator friendly species. A hedgerow consisting of a mix of native and naturalised species will be planted along the southern and eastern boundaries of the site, separating the development from the Trusky stream.		
33	The lanscape plan also provides for the creation of additional green spaces including herbaceous lawns, which will contribute to reduce the ecological footprint of the development.		
34	Trees within private gardens adjacent to the development site will be protected in accordance with BS: 5837 (Trees in relation to Construction).		
35	If stone or topsoil is imported onto the site, the source material will be screened by a suitably qualified ecologist to verify it is free from any Third Schedule invasive species before transportation to the site.		
36	<ul style="list-style-type: none"> ➤ All machinery will be thoroughly cleaned, dried and disinfected prior to arrival on site and before removal from site post-works using Virkon 1% biocide and departure from the site to prevent the spread of invasive species such as Asian Clam, Zebra Mussel, Crayfish plague. ➤ Where staff are working instream (only for the installation of the stormwater outfalls), staff footwear and PPE will be inspected on daily completion of the works and vegetation or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkron Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Machinery that has been working within the channel and other equipment used in channel including PPE will be wiped down with 1% solution of Virkron Aquatic or another proprietary disinfection product. This will be carried out daily on completion of the works 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<p>and/or prior to staff and machinery moving off site. Sand bags placed instream will not be re-used in other watercourses.</p> <ul style="list-style-type: none"> ➤ Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g. Rhododendron, Japanese Knotweed, Giant Rhubarb etc.) by thoroughly washing vehicles prior to entering the site. ➤ Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present. 		
37	<p>To mitigate for any potential disturbance during the operational phase, the site lighting has been designed to limit the environmental impact of artificial lighting on existing flora and fauna in the area.</p> <p>The luminaire specified is an LED pole mounted luminaire with NEMA socket and photocell, this fitting was selected for the following reasons:</p> <ul style="list-style-type: none"> ➤ Low level lighting ➤ Minimal upward light spill ➤ Low voltage LED light will be in use to reduce impacts on fauna 		
38	<p>As part of the landscape plan, the introduction of a wildflower meadow to encourage biodiversity and create a micro-climate atmosphere is proposed. The landscape plan also outlines that the proposed development will encourage the use of native, naturalised and indigenous species throughout much of the landscaped areas. Landscape mitigation measures arising from the proposed development outlined in the landscape plan, will create a positive natural aesthetic quality to the area.</p>		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
Air Quality and Dust Control			
40	On-road vehicles to comply to set emission standards. All non-road mobile machinery (NRMM) to be fitted with appropriate exhaust system and be regularly serviced.		
41	Hard surfacing and effective cleaning of haul routes and appropriate speed limit around site		
42	<ul style="list-style-type: none"> ➤ The Contractor shall ensure that adequate provision is made to damp down areas where activities are likely to create dust. Measures shall include the spraying by pressure hoses to suppress dust and also the provision of bowsers and suction road sweepers where appropriate. ➤ Plant shall be sited and screened where necessary to minimise dust emission to adjoining areas. ➤ All stockpiles shall be covered to prevent the generation of dust. ➤ The Contractor shall ensure that off-site observations and monitoring of dust takes place to confirm that steps are successful in minimising dust release from site. ➤ The Contractor shall take all measures necessary to prevent spillage onto public roads adjoining the Site and all roads forming part of the Site. ➤ The Contractor shall, using wheel washing equipment or other methods as approved by the Employer's Representative, prevent mud from the site being carried onto any surface or facilities in use by the public. In the event of mud or site material being deposited on a public road surface, the Contractor shall take all necessary steps to ensure the roads are cleaned immediately using road vacuum sweepers, or similar methods to be approved by the Employer's Representative, without adversely affecting public traffic. ➤ The Contractor shall clean the public gullies in the vicinity of the site before the works commence, at regular intervals during the works, and upon completion of the 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	works. That Contractor shall also undertake to replace road markings in the immediate vicinity of the site as and when the need for such replacement arises.		
43	<p>The following measures will be enforced to ensure that dust nuisance during the construction phase beyond the site boundary is minimised:</p> <ul style="list-style-type: none"> ➤ If dust levels become an issue, then all dust generating activities on site will cease until such time as weather conditions improve (e.g. wind levels drop or rain falls) or mitigation measures such as damping down of the ground are completed. ➤ Overburden will be progressively removed from the working area in advance of construction. ➤ Dampening down the dust at the source by the use of barriers such as debris netting on scaffolding around the building to block dust escaping where the building is within 10m of the site boundary where residential properties exist. ➤ Site road ways will be maintained in a stoned hard core condition not allowing soil to accumulate which when dry can create dust. ➤ Wheel wash equipment will be set up at the site exit gate for all construction vehicles to pass through prior to leaving the site thus ensuring that no dirt etc. is transported outside the site onto the roadways. ➤ Plant and equipment that have the potential to create volumes of dust will have appropriate attachments to allow water source to dampen dust to not allow it to get airborne. ➤ Deploy Road Sweeper as required on External Roads. <p>The above mitigation measures relating to dust and air quality will be implemented to minimise potential impacts on Human Health during the construction phase</p>		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
44	<ul style="list-style-type: none"> ➤ All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. ➤ Machinery were switched off when not in use. <p>Aggregate materials for the construction infrastructure will be sourced onsite from the proposed cut areas, where possible, which further reduced potential emissions.</p>		
45	<ul style="list-style-type: none"> ➤ All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. ➤ Overburden will be progressively removed from the working area in advance of construction. ➤ Dampening down the dust at the source by the use of barriers such as debris netting on scaffolding around the building to block dust escaping where the building is within 10m of the site boundary where residential properties exist. ➤ Site roadways will be maintained in a stoned hard core condition not allowing soil to accumulate which when dry can create dust. ➤ Wheel wash equipment will be set up at the site exit gate for all construction vehicles to pass through prior to leaving the site thus ensuring that no dirt etc. is transported outside the site onto the roadways. ➤ Plant and equipment that have the potential to create volumes of dust will have appropriate attachments to allow water source to dampen dust to not allow it to get airborne. ➤ Deploy Road Sweeper as required on External Roads. ➤ Dust levels will be monitored visually, on a daily basis by the project Environmental Manager. If dust levels become an issue, then all dust generating activities on site will cease until such time as weather conditions improve (e.g. wind levels drop or rain falls) or mitigation measures such as damping down of the ground are completed. ➤ 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
Noise			
46	All vehicles to switch off engines when not in use – no idling vehicles		
47	<p>Best practice measures for noise control will be adhered to onsite during the construction phase of the proposed development. The measures include:</p> <ul style="list-style-type: none"> ➤ Construction operations will in general be confined to the period Monday-Friday 0800-1900 h, and Saturday 0800-1600 h. ➤ Where it is proposed to operate plant during the period 0700-0800 h, standard ‘beeper’ reversing alarms will be replaced with flat spectrum alarms. ➤ Hooting will be prohibited onsite. Drivers of plant and vehicles will be instructed to avoiding hooting at all times. ➤ Plant used onsite during the construction phase will be maintained in a satisfactory condition and in accordance with manufacturer recommendations. In particular, exhaust silencers will be fitted and operating correctly at all times. Defective silencers will be immediately replaced. ➤ Queuing of trucks outside the site entrance will be prohibited. ➤ A site representative will be appointed as a liaison officer with the local community. Prior to commencement of construction, contact details for the officer will be circulated to all local residents. The officer will notify local residents of upcoming works phases and likely noise sources. ➤ All complaints of noise received during the construction phase will be logged in a register and investigated immediately. Details of follow-up action will be included in the register. 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<ul style="list-style-type: none"> ➤ Where it is proposed to import potentially noisy plant to the site, the potential impact of noise emissions will be assessed in advance. ➤ Guidance set out in BS 5228-1:2009+A1:2014 with respect to noise control will be applied throughout the construction phase. ➤ Throughout the construction phase, vehicles accessing the site will be subjected to a low speed restriction through Cnoc Fraoigh in order to reduce traffic noise. <p>The above mitigation measures relating to noise will be implemented to minimise potential impacts on Human Health during the construction phase</p>		
48	<ul style="list-style-type: none"> ➤ Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts. ➤ Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1998, and any subsequent amendments. ➤ Regular maintenance of plant will be carried out in order to minimise noise emissions. ➤ All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works. ➤ Compressors will be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. ➤ Machines, which are used intermittently, will be shut down during those periods when they are not in use. <p>Training will be provided by the site management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation.</p>		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
49	<ul style="list-style-type: none"> ➤ All vehicles and mechanical equipment shall be maintained in good and efficient working order and shall be fitted with effective exhaust silencers; ➤ All compressors shall be “sound reduced” models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use and all ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers; ➤ Machines in intermittent use shall be shut down in the intervening periods between works or throttled down to a minimum. Generators, or any other plant, shall not be left running / operational after hours unless in an emergency, and agreed with the Employer’s Representative; ➤ Where practicable, plant with directional noise characteristics shall be positioned to minimise noise at adjacent properties; ➤ Static machines shall be sited as far away as practicable from inhabited buildings; ➤ Where it is necessary to provide power for the running of traffic signals, pumps etc., at any time outside normal working hours, then the sources of such power shall be from mains electricity except if the Employer’s Representative agrees in writing that alternative plant may be used, after consultation with Galway County Council; ➤ Good relations with people living and working in the vicinity of the roadworks are important. People who are likely to be affected by the noise shall be informed, by letter drop or other appropriate means, of any works to be carried out outside normal working hours. Notification of the public shall take place at least one week prior to the commencement of Site works; ➤ The Contractor shall organise his operations with regard to the positioning of plant and the location of haul routes etc., so that it minimises construction noise to adjacent properties; ➤ The period referred to as ‘night’ for the purposes of the Contract shall be from 18:00 hours to 08:00 hours. 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
Material Assets			
50	All construction activities will be managed and directed by a Traffic Management Plan (TMP). The details of the TMP will be agreed with the roads department of the Local Authority in advance of construction activities commencing on-site.		
51	<ul style="list-style-type: none"> ➤ Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access; ➤ Construction and delivery vehicles will be instructed to use only the approved routes for access and movement; ➤ Appropriate vehicles and equipment will be used to minimise environmental impacts from transporting construction material; ➤ Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds within and adjacent the site; ➤ Parking of site vehicles will be managed, and will not be permitted on public roads, unless otherwise agreed with the Local Authority subject to traffic management measures; ➤ A road sweeper will be employed to clean the public roads adjacent to the site of any residual debris that may be deposited on the public road leading away from the construction site; ➤ On site wheel washing will be undertaken for construction trucks and vehicles to remove any debris prior to leaving the site, to remove any potential debris on the local roads; ➤ All vehicles will be suitably serviced and maintained to avoid leaks or spillage of oil, petrol or diesel; ➤ Safe and secure pedestrian facilities are to be provided where construction works obscure any existing pedestrian footway. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<p>and pedestrian movements, and to be identified by appropriate signage. Pedestrian facilities will cater for vulnerable users and mobility impaired persons.</p>		
52	<p>The following provisions shall be made in terms of traffic management at construction access points:</p> <ul style="list-style-type: none"> ➤ Advance warning signage of construction access points shall be adequately signed on the L1321, ➤ including local side roads and the existing residential access road, i.e. “Caution site entrance ahead”; ➤ Construction access gates shall remain closed when not in use; ➤ A site safety notice shall be erected at construction access points; ➤ Temporary traffic management measures deployed during the hours of darkness shall serve to highlight ➤ the precise location of the construction access. Such measures could include additional traffic cones, road danger lamps and/or reflectorized signage; ➤ Routine inspection shall be carried out to ensure that signage and visibility splays are not obstructed; ➤ The road network immediately outside the site access shall be regularly inspected for cleanliness and cleaned as necessary. Any damage to the L1321 or residential roads caused by construction traffic shall be repaired as necessary; and ➤ Within the site, sufficient space shall be allocated to allow vehicles to turn around safely on-site. 		
53	<ul style="list-style-type: none"> ➤ The proposed development incorporates extensive site permeability with high quality footpaths and streets appropriate for mixed traffic cycling, with high quality cycle parking and car parking all in line with the County Development Plan and national standards and best practice. 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<ul style="list-style-type: none"> ➤ The internal roads layout is designed to ensure vehicular speeds are low. The road alignment consists of smooth horizontal curves which are complemented with raised tables at specific locations to ensure that speeds are self-regulated below 30kph. Internal junctions operate under priority control and generally consist of small radius curves to encourage slow approach speeds. ➤ The development incorporates upgrades to the local road network, namely the L1321 creating a high quality direct pedestrian and cyclist link towards the town centre of Bearna and ensuring integration with existing walking, cycling, public transport provisions and local amenities. ➤ Demand Management is also underpinned by the co-location of residential, childcare and leisure and amenity facilities. ➤ The propensity for car ownership and car use is managed through measures that include reduced residential parking provision and increased cycle parking provision in line with the County Development Plan and national standards and best practice ➤ The development contains the required infrastructure to provide electric charging to all car parking spaces. 		
54	<ul style="list-style-type: none"> ➤ Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works. ➤ Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified. ➤ Excavation permits will be completed and all plant operators and general operatives will be inducted and informed as to the location of any services. 		
55	<ul style="list-style-type: none"> ➤ The Cnoc Fraoigh wastewater network will be connected to the completed wastewater network of the proposed development via a new pumping system, and from there to the public sewer system, in advance of the decommissioning of the existing wastewater treatment plant. 		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	<p>➤ This will ensure continuity of wastewater service for the residents of Cnoc Fraoigh.</p> <p>This proposed wastewater pumping system will be a Type 3 system (greater than 20nr. houses), which will be designed and installed in accordance with Irish Water’s Code of Practice for Wastewater Infrastructure, and is to serve the existing 21nr. residential units along with the proposed single residential unit nr. 121.</p> <p>The pumping system is to be sited at a distance greater than 15m from any residential property, as noted on the design drawings, and in accordance with Irish Water’s requirements.</p>		
Cultural Heritage			
56	<p>➤ All cultural heritage items which are to be removed to facilitate the Proposed Development will be recorded by means of photographs, written descriptions and scale drawings if necessary prior to removal.</p> <p>➤ Groundworks at all locations shall be monitored and any sub-surface traces of the cultural heritage items shall be recorded by means of photographs, written descriptions and scale drawings if necessary.</p>		
Environmental Management			
57	Effective vehicle cleaning and wheel washing on leaving site and damping down of haul routes		
58	The machinery used to install the outfalls to the Trusky Stream will be thoroughly cleaned, dried and disinfected prior to arrival on site and before relocating to another site post-works using Virkon 1% biocide and departure from the site to prevent the		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	spread of invasive species such as Asian Clam, Zebra Mussel, Crayfish plague. This process will be detailed in the method statement.		
59	All operatives working on the site will be made fully aware of the environmental responsibilities, conditions and requirements along with a full description of the methods to be employed. This information will be imparted at a dedicated site induction prior to commencing work on the site.		

6. **MONITORING PROPOSALS**

The Monitoring Proposals which will be implemented are presented in this section of the CEMP. The CEMP will be finalised subsequent to any permission granted by An Bord Pleanála and will be updated prior to construction to include, inter alia, any additional requirements pursuant to relevant planning conditions imposed.

By presenting the monitoring proposals in the below format, it is intended to provide a checklist of all the required monitoring that can be tracked, reviewed and reported as it is implemented throughout the project.

Table 6-1 Monitoring Measures

Ref. No.	Monitoring Measure	Frequency	Reporting Period	Responsibility
Pre-Commencement Phase				
1	Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken prior to construction at two locations on the Truskey stream.			
2	An environmental officer with the responsibility for ensuring the environmental measures prescribed in this document are adhered to will be assigned to the project.			
Construction Phase				
3	During the construction phase, field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken for the adjacent Truskey stream			
4	<ul style="list-style-type: none"> ➤ Daily general visual inspections of site operations and inspections of all watercourses within the site and in the surrounding area by the Environmental Manager or a suitably qualified and competent person as delegated; ➤ Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly and to identify and maintenance that is required. Any changes, such as discolouration, odour, oily sheen or litter should be noted and corrective action should be implemented. High risk locations such as settlement ponds will be inspected daily. Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement; 			

Ref. No.	Monitoring Measure	Frequency	Reporting Period	Responsibility
	<p>➤ Event based inspections by the ECoW as follows:</p> <ul style="list-style-type: none"> ○ >10 mm/hr (i.e. high intensity localised rainfall event); ○ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ○ Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week). 			
5	Sondes will be put in place in the Trusky Stream upstream and downstream of the works area. These will continuously measure turbidity throughout the construction period. If there is a 10% or greater difference between upstream and downstream turbidity, an alarm will sound and a message will be sent to the site foreman and the ECoW. Works will be ceased until the cause of the difference is identified and (if it is associated with the works) rectified			
6	Archaeological monitoring of groundworks during construction will take place. A report on the results of monitoring shall be compiled and submitted to the relevant authorities on completion of the project. If any sites are detected during the pre-construction monitoring, they will be preserved by record (archaeologically excavated) or preserved in-situ (avoidance) and therefore a full record made of same.			
7	A checklist will be filled in on a weekly basis to show how the measures above have been complied with. Any environmental incidents or non-compliance issues will immediately be reported to the project team.			
8	The construction management team will be regularly monitoring the works and will be fully briefed and aware of the environmental constraints and protection measures to be employed.			
9	The works will be supervised by a suitably qualified ecologist (ECoW) on a regular basis. An audit of the works will be undertaken during the visits and it will			

Ref. No.	Monitoring Measure	Frequency	Reporting Period	Responsibility
	be ensured that the prescribed methods are employed. Any potential impacts additional to those predicted will be highlighted and if necessary, additional measures put in place to prevent them. Any deviance from the agreed methodology will be highlighted and if necessary rectified.			
10	<p>The works associated with the construction of the stormwater outfalls will require full time, on-site supervision from the ECoW. The ECoW will be responsible for:</p> <ul style="list-style-type: none"> ➤ Ensuring that the works are carried out in accordance with the approved method statements. ➤ Highlighting and discussing any deviations from the agreed plan. Deviations will be agreed with the relevant authorities and the project team in advance of adoption. ➤ Taking water samples and turbidity readings as appropriate. Discussing works and preparations with the site staff to ensure that works can be completed as per agreed method statements. ➤ Stop works if there are any effects on the Trusky Stream. 			

7. COMPLIANCE AND REVIEW

7.1 Site Inspections and Environmental Audits

Routine inspections of construction activities will be carried out on a daily and weekly basis by the Site Environmental Manager and the Construction Manager to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place.

Environmental inspections will ensure that the works are undertaken in compliance with this Construction & Environmental Management Plan and any consent conditions. Only suitably trained staff will undertake environmental site inspections.

7.2 Environmental Compliance

The following definitions shall apply in relation to the classification of Environmental Occurrences during construction of the proposed development:

Environmental Near Miss: An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

Environmental Incident: Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the site boundary.

Environmental Non-Compliance: Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the EMP.

7.3 Corrective Action Procedure

A corrective action is implemented to rectify an environmental problem on-site. Corrective actions will be implemented by the Construction Manager, as advised by the Site Environmental Manager. Corrective actions may be required as a result of the following;

- > Environmental Audits;
- > Environmental Inspections and Reviews;
- > Environmental Incidents; and,
- > Environmental Complaints.

A Corrective Action Notice will be used to communicate the details of the action required. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on site that requires immediate attention direct communications between the Construction Manager and the Site Environmental Manager will be conducted. This in turn will be passed down to the site staff involved. A Corrective Action Notice will be completed at a later date.